



26 February 1993

Mr. William Kistler
Plant Manager
Ash Grove Cement Company
P.O. Box 83007
Portland, Oregon 97283

RE: Ash Grove Cement Plant, Portland, Oregon
Monitoring Well Installation and Monitoring
PBS Project No. 5065.00

Dear Mr. Kistler:

Upon authorization from Ash Grove Cement Company on December 21, 1992, PBS installed three groundwater monitoring wells around the above-ground fuel oil tanks at the Ash Grove Portland Plant. The purpose of these wells is to serve as a leak detection system for the tanks.

The tanks consist of one 125,000 gallon waste oil tank, one 25,000 gallon off-spec waste oil tank, and one 4,000 gallon #2 fuel oil tank. The two larger tanks are vertically oriented and rest on flat bases. The smaller tank is horizontally oriented and is mounted on saddles. The 25,000 gallon tank reportedly once held diesel fuel.

WELL CONSTRUCTION & GROUNDWATER SAMPLING

Three wells were constructed in the locations shown on the attached Site Plan. The shallow groundwater gradient was assumed to be in a westerly direction, toward the Willamette River. One well (MW-1) was placed in an upgradient location, and the other two wells (MW-2, MW-3) were placed in downgradient locations.

All wells were drilled and constructed by Pacific Northwest Drilling Company of Eugene, Oregon on December 22, 1992. Drilling was performed with a hollow-stem auger.

Each well was drilled to a depth of 15 feet. Soil samples were obtained using standard penetration methods and split-spoon samplers at 5-foot intervals. Soil was visually examined and

ENVIRONMENTAL
MANAGEMENT AND
CONSULTING

1220 S.W. Morrison

Portland, Oregon 97205

503/248-1939

503/248-0223 FAX

3/5 one copy sent to Doug Hale 9

Appendix66-000001

lithology was logged (see attached Boring Logs).

The bottom 10 feet of the wells were screened with slotted PVC screen, and the remaining well constructed with 2-inch threaded PVC. A sand filter-pack was placed around the screened interval wherever possible, however heaving sand made placement of the filter pack impossible in some cases (see boring logs for well construction details).

Each well was completed with a locking cap and monument, finished above the ground surface. Steel bullards were placed around the wells as required by Oregon Department of Water Resources. Each well was surveyed to determine vertical elevation to the top of the monument. The wells were developed on January 8, 1993 using surge blocks.

Water samples were collected from each well using dedicated disposable bailers. Approximately four well volumes were purged with the bailer before water samples were collected.

Samples were placed directly into 1-liter, amber glass bottles with Teflon lid seals, then stored at 4°C for the duration of site work and transport to the laboratory.

FINDINGS

Well elevations and water level data is given in Table 1. Groundwater elevation contours are plotted on Figure 1. The depth to groundwater is 7-8 feet below ground surface, and the groundwater contours suggest that the direction of local shallow groundwater flow is to the northwest.

Low levels of diesel fuel (690 and 790 parts per billion) were detected in wells MW-1 and MW-3, respectively. No hydrocarbons were detected in well MW-2.

According to Dick Reid of Coffey Laboratories, the contaminant profiles looked like a weathered diesel fuel, since many of the lighter fractions were dispersed. No heavier oil was detected in the profile.

TABLE 1
WATER LEVEL MEASUREMENTS (1/8/93)

<u>Well #</u>	<u>Elevation - Top of Metal Casing</u>	<u>Depth to Groundwater*</u>	<u>Groundwater Elevation</u>
MW-1	100.00'	9.98'	90.02'
MW-2	99.22'	9.79'	89.43'
MW-3	99.51	10.64'	88.87'

Datum: Top of well casing - MW-1 (assumed 100.00')
*Measured from top of metal well casing

TABLE 2
LABORATORY ANALYSIS

<u>ANALYSIS</u>	<u>WELL MW-1</u>	<u>WELL MW-2</u>	<u>WELL MW-3</u>	<u>DETECTION LIMIT</u>
Gasoline	ND	ND	ND	70
Diesel	690	ND	790	200

ND: None Detected
All values are given in parts per billion (ppb)
Analysis by Modified EPA Method 8015

DISCUSSION

The concentrations of diesel fuel in wells MW-1 and MW-3 represent relatively low levels of contamination. Although there are no regulatory standards for diesel fuel in groundwater, there are standards for many of the constituents that make up diesel fuel. The tests which would detect those compounds were not run on these samples.

The levels of diesel fuel detected may be the result of spillage of diesel fuel from the 25,000 gallon tank. You had earlier reported to PBS that water was periodically drained from the bottom of the tank by an employee of Ash Grove, and the water/diesel fuel mixture was allowed to spill onto the unprotected ground surface.

Ash Grove Cement Company
Monitoring Well Installation & Monitoring
26 February 1993
Page 4

RECOMMENDATIONS

This situation is not required to be reported to the EPA or Oregon DEQ, since the contamination is not related to an underground storage tank, nor was it apparently the result of a reportable spill. Since the apparent cause of the release has been eliminated by the placement of a concrete slab around the tanks, no further abatement measures seem necessary at this time.

Groundwater samples should be collected from the wells and analyzed for BTEX compounds (EPA Method 8020) and Polynuclear Aromatic Hydrocarbons (EPA Method 8310) to determine whether the levels meet Oregon Groundwater Quality Standards (OAR 340-122-045). The groundwater gradient should also be measured at that time.

Periodic leak-detection monitoring can continue to focus on detection of heavy oils.

Please call me if you have any questions regarding this information.

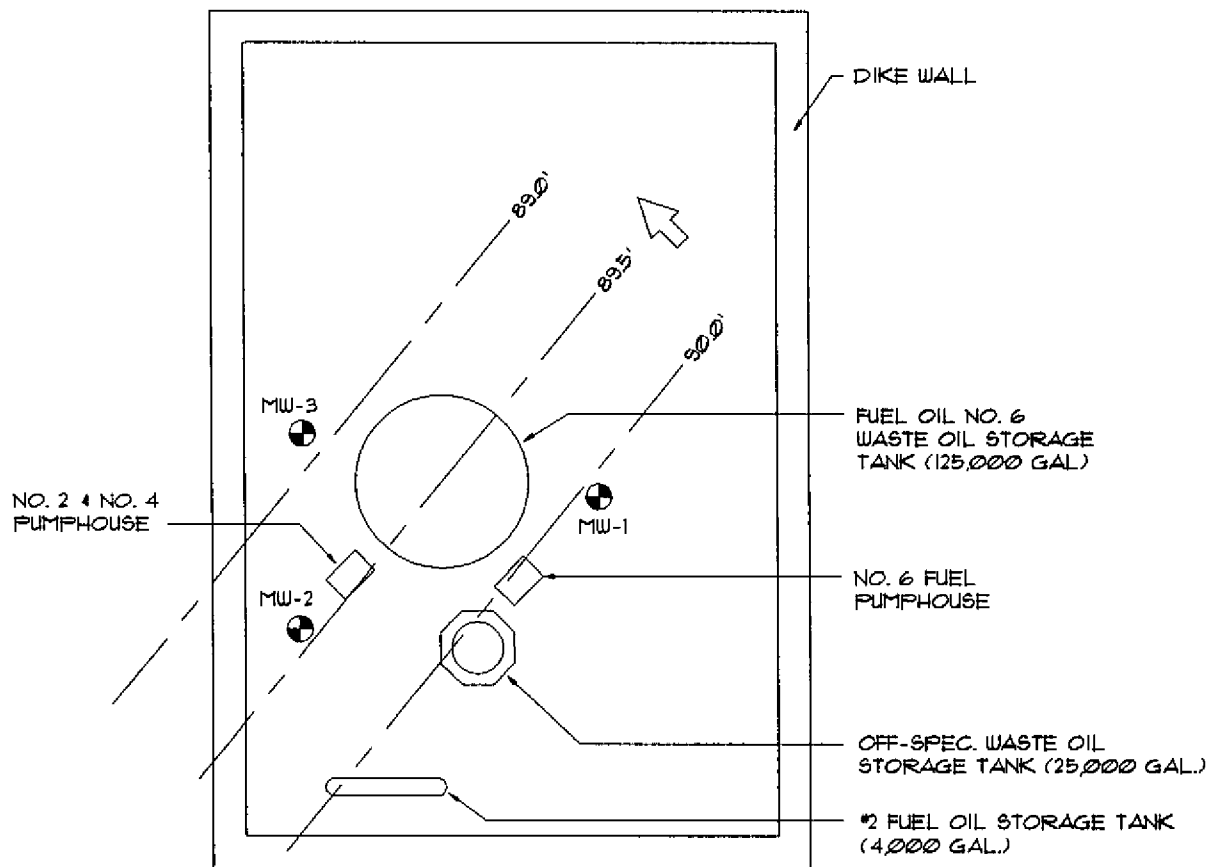
Sincerely,



Erik Anderson, R.G.
Director of Environmental Services

Attachments:

- Site Plan
- Test Boring Logs (3 pages)
- Laboratory Reports
- Sample Chain of Custody Forms



LEGEND

- MONITORING WELL LOCATIONS
- APPROX. DIRECTION OF GROUNDWATER FLOW
- GROUNDWATER ELEVATION CONTOUR LINES

NOT TO SCALE

5065.00

14 JAN 93

5065GECM

FIGURE 1

SITE PLAN & GROUNDWATER ELEVATION CONTOUR MAP
ASH GROVE CEMENT COMPANY



1220 SW MORRISON
PORTLAND, OREGON
97205
503/248-1939
FAX
503/248-0223

1 OF 1

SECTION TWO

2.1

[illegible]

BORE NUMBER: MW-2
PAGE: 1 OF 1
REFERENCE ELEV.: GROUND SURFACE
DRILL DEPTH: 15'
DATE: 22 DEC 92
DRAWING NUMBER: 5067BOR2



















































PBS
EXPERIMENTAL

Appendix66-000007

EXPLORATORY BORING RECORD

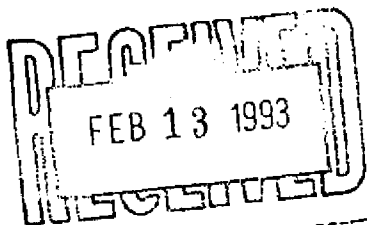
PROJECT NAME: ASH GROVE CEMENT
 PROJECT NUMBER: 5067.00
 LOCATION: TANK FARM
 DRILLED BY: PNW DRILLING
 DRILLING METHOD: HS AUGER
 RECORDED BY: ERIK ANDERSON

BORE NUMBER: MW-3
 PAGE: 1 OF 1
 REFERENCE ELEV.: GROUND SURFACE
 DRILL DEPTH: 15'
 DATE: 22 DEC 92
 DRAWING NUMBER: 5067BOR3

NOTES	WELL DETAILS	CORE SAMPLES	SAMPLE # (SAMPLE TYPE)	LITHOLOGIC DESCRIPTION	SAMPLE DETAILS	
					RECOVERY PERCENT	BLOW COUNTS (N-COMP)
CEMENT						
BENTONITE						
10/20 SILICA SAND						
			(SS)	SAND: BROWN, WET, GRADING INTO SILTY CLAY	100%	3-4-4
						
						
						
						
			(SS)	SILT: DARK GRAY, GRADING INTO SAND, BLACK WET	100%	4-7-7
						
						
						
NATIVE SAND						
			(SS)	SAND: DARK GRAY, WET, WITH PLANT & WOOD FRAGMENTS	100%	6-7-6
						
						
						
						
						
						
						
						
						
						
						



REMARKS: SS = Split barrel sampler. Samples driven with a 140 lb. hammer using a 30" stroke. Blow counts may not be representative of actual soil density.



Report Date: February 11, 1993

Job#: GE-930205AA-3

PO#: None

Project#: 5065.00

Project: AGC-PBS

Attention: D. Hancock
PBS Environmental Building
Consultants, Inc.
1220 SW Morrison, Suite 500
Portland, OR 97205

SAMPLE INFORMATION:

Date Samples Were Received By Laboratory: 02/05/93

Lab No.	Field Identification	Sample Matrix	Date	Time
1	5065.00-1	Ground Water	02-05-93	1100
2	5065.00-2	Ground Water	02-05-93	1100
3	5065.00-3	Ground Water	02-05-93	1100

ANALYTICAL RESULTS:

ANALYSIS PERFORMED: Hydrocarbon Scan of ground water by Modified EPA
Method 8015, GC/FID.

<u>PARAMETER</u>	<u>DETECTION LIMIT</u>	<u>SAMPLE #1 RESULTS</u>	<u>SAMPLE #2 RESULTS</u>	<u>SAMPLE #3 RESULTS</u>
Gasoline	70	ND	ND	ND
Diesel	200	690	ND	790

Results expressed as $\mu\text{g/L}$ unless otherwise noted.

ND means none detected at or above the detection limit listed.

Sincerely,

Susan M. Coffey
Susan M. Coffey
President

SMC/mlh

This report is for the sole and exclusive use of the above-named client. Samples are retained 15 days from the report date, or until holding time expires. Results pertain only to samples submitted.

COFFEY LABORATORIES, INC.

10400 N.E. Whitaker Way • Portland, OR • 97230 • (503) 254-1794 • FAX (503) 254-1452

Appendix66-000009

12423 N.E. WHITAKER WAY, PORTLAND, OR 97230
(503) 254-1794 • FAX (503) 254-1452



(503) 276-0385

[illegible]

WHITE COPY - COFFEY LABORATORIES

YELLOW COPY - CLIENT'S COPY

SHADED AREA FOR LABORATORY USE ONLY

CHAIN OF CUSTODY INSTRUCTIONS ON BACK OF YELLOW COPY

(7/90)

Appendix66-000010



C/U 5-3-98

~~5-3-98~~

DICK

26 February 1993

Mr. William Kistler
Plant Manager
Ash Grove Cement Company
P.O. Box 83007
Portland, Oregon 97283

Post-It™ brand fax transmittal memo 7671		# of pages > 4
To <i>Dick Label</i>	From <i>DVH</i>	
Co.	Co.	
Dept.	Phone #	
Fax #	Fax #	

RE: Ash Grove Cement Plant, Portland, Oregon
Monitoring Well Installation and Monitoring
PBS Project No. 5065.00

Check Wells

Dear Mr. Kistler:

Upon authorization from Ash Grove Cement Company on December 21, 1992, PBS installed three groundwater monitoring wells around the above-ground fuel oil tanks at the Ash Grove Portland Plant. The purpose of these wells is to serve as a leak detection system for the tanks.

The tanks consist of one 125,000 gallon waste oil tank, one 25,000 gallon off-spec waste oil tank, and one 4,000 gallon #2 fuel oil tank. The two larger tanks are vertically oriented and rest on flat bases. The smaller tank is horizontally oriented and is mounted on saddles. The 25,000 gallon tank reportedly once held diesel fuel.

WELL CONSTRUCTION & GROUNDWATER SAMPLING

Three wells were constructed in the locations shown on the attached Site Plan. The shallow groundwater gradient was assumed to be in a westerly direction, toward the Willamette River. One well (MW-1) was placed in an upgradient location, and the other two wells (MW-2, MW-3) were placed in downgradient locations.

All wells were drilled and constructed by Pacific Northwest Drilling Company of Eugene, Oregon on December 22, 1992. Drilling was performed with a hollow-stem auger.

Each well was drilled to a depth of 15 feet. Soil samples were obtained using standard penetration methods and split-spoon samplers at 5-foot intervals. Soil was visually examined and

ENVIRONMENTAL
MANAGEMENT AND
CONSULTING

1220 S.W. Morrison

Portland, Oregon 97205

503/248-1939

503/248-0223 FAX

Ash Grove Cement Company
Monitoring Well Installation & Monitoring
26 February 1993
Page 2

lithology was logged (see attached Boring Logs).

The bottom 10 feet of the wells were screened with slotted PVC screen, and the remaining well constructed with 2-inch threaded PVC. A sand filter-pack was placed around the screened interval wherever possible, however heaving sand made placement of the filter pack impossible in some cases (see boring logs for well construction details).

Each well was completed with a locking cap and monument, finished above the ground surface. Steel bullards were placed around the wells as required by Oregon Department of Water Resources. Each well was surveyed to determine vertical elevation to the top of the monument. The wells were developed on January 8, 1993 using surge blocks.

Water samples were collected from each well using dedicated disposable bailers. Approximately four well volumes were purged with the bailer before water samples were collected.

Samples were placed directly into 1-liter, amber glass bottles with Teflon lid seals, then stored at 4°C for the duration of site work and transport to the laboratory.

FINDINGS

Well elevations and water level data is given in Table 1. Groundwater elevation contours are plotted on Figure 1. The depth to groundwater is 7-8 feet below ground surface, and the groundwater contours suggest that the direction of local shallow groundwater flow is to the northwest.

Low levels of diesel fuel (690 and 790 parts per billion) were detected in wells MW-1 and MW-3, respectively. No hydrocarbons were detected in well MW-2.

According to Dick Reid of Coffey Laboratories, the contaminant profiles looked like a weathered diesel fuel, since many of the lighter fractions were dispersed. No heavier oil was detected in the profile.

Ash Grove Cement Company
Monitoring Well Installation & Monitoring
26 February 1993
Page 3

TABLE 1
WATER LEVEL MEASUREMENTS (1/8/93)

<u>Well #</u>	<u>Elevation - Top of Metal Casing</u>	<u>Depth to Groundwater*</u>	<u>Groundwater Elevation</u>
MW-1	100.00'	9.98'	90.02'
MW-2	99.22'	9.79'	89.43'
MW-3	99.51	10.64'	88.87'

Datum: Top of well casing - MW-1 (assumed 100.00')

*Measured from top of metal well casing

TABLE 2
LABORATORY ANALYSIS

<u>ANALYSIS</u>	<u>WELL MW-1</u>	<u>WELL MW-2</u>	<u>WELL MW-3</u>	<u>DETECTION LIMIT</u>
Gasoline	ND	ND	ND	70
Diesel	690 PPB	ND	790 PPB	200 PPB

ND: None Detected

All values are given in parts per billion (ppb)
Analysis by Modified EPA Method 8015

DISCUSSION

The concentrations of diesel fuel in wells MW-1 and MW-3 represent relatively low levels of contamination. Although there are no regulatory standards for diesel fuel in groundwater, there are standards for many of the constituents that make up diesel fuel. The tests which would detect those compounds were not run on these samples.

The levels of diesel fuel detected may be the result of spillage of diesel fuel from the 25,000 gallon tank. You had earlier reported to PBS that water was periodically drained from the bottom of the tank by an employee of Ash Grove, and the water/diesel fuel mixture was allowed to spill onto the unprotected ground surface.

Ash Grove Cement Company
Monitoring Well Installation & Monitoring
26 February 1993
Page 4

RECOMMENDATIONS

This situation is not required to be reported to the EPA or Oregon DEQ, since the contamination is not related to an underground storage tank, nor was it apparently the result of a reportable spill. Since the apparent cause of the release has been eliminated by the placement of a concrete slab around the tanks, no further abatement measures seem necessary at this time.

Groundwater samples should be collected from the wells and analyzed for BTEX compounds (EPA Method 8020) and Polynuclear Aromatic Hydrocarbons (EPA Method 8310) to determine whether the levels meet Oregon Groundwater Quality Standards (OAR 340-122-045). The groundwater gradient should also be measured at that time.

Periodic leak-detection monitoring can continue to focus on detection of heavy oils.

Please call me if you have any questions regarding this information.

Sincerely,



Erik Anderson, R.G.
Director of Environmental Services

Attachments:

- Site Plan
- Test Boring Logs (3 pages)
- Laboratory Reports
- Sample Chain of Custody Forms



18-2

11 June 1993

~~REDACTED~~

Mr. William Kistler
Plant Manager
Ash Grove Cement Company
P.O. Box 83007
Portland, Oregon 97283

RE: Ash Grove Cement Plant, Portland, Oregon
Groundwater Monitoring - Fuel Oil Tank Farm
Follow-Up Monitoring
PBS Project No. 5065.10

Dear Mr. Kistler:

Upon authorization from Ash Grove Cement Company on April 22, 1993, PBS collected groundwater samples from the three groundwater monitoring wells around the above-ground fuel oil tanks at the Ash Grove Portland Plant. The wells were installed in December, 1992 as a leak detection system for the tanks. The first round of sampling detected diesel fuel in wells MW-1 and MW-3 (690 and 790 ppm, respectively). The source of the diesel fuel contamination is believed to be from spillage from the tank which previously contained diesel fuel.

The purpose of the current phase of testing was to identify and quantify potentially hazardous constituents in the water from the three wells, related to the diesel fuel.

FIELD METHODS

Water samples were collected from each well using dedicated disposable bailers. Approximately four well volumes were purged with the bailer, and chemical parameters (pH, temperature, and specific conductance) before water samples were collected.

Samples were placed directly into appropriate laboratory-supplied containers, then stored at 4°C for the duration of site work and transport to the laboratory. Samples were analyzed for aromatic volatile organics (EPA 8020) and polynuclear aromatic hydrocarbons (EPA 8270 w/ SIM).

ENVIRONMENTAL
MANAGEMENT AND
CONSULTING

1220 S.W. Morrison

Portland, Oregon 97205

503/248-1939

503/248-0223 FAX

Copy to Lim Post sent 6/15/93. File 18-1. Rollic Eric Anderson

Appendix66-000015

FINDINGS

Well elevations and water level data is given in Table 1. Groundwater elevation contours are plotted on Figure 1. The depth to groundwater is 4-6 feet below ground surface. The groundwater contours suggest that the direction of local shallow groundwater flow is to the south/southeast. This is almost the opposite direction as measured in February, 1993, when the groundwater flow direction was to the northwest.

Pyrene, a common constituent of diesel fuel, was detected in the water from well MW-3 at 0.12 parts per billion (ppb). Water from the same well contained 790 ppm diesel fuel during the previous investigation in February.

No other contaminants were detected in any of the wells.

TABLE 1
WATER LEVEL MEASUREMENTS (1/8/93)

<u>Well #</u>	<u>Elevation - Top of Metal Casing</u>	<u>Depth to Groundwater*</u>	<u>Groundwater Elevation</u>
MW-1	100.00'	8.68'	91.32'
MW-2	99.22'	8.62'	90.60'
MW-3	99.51	6.49'	93.02'

Datum: Top of well casing - MW-1 (assumed 100.00')

*Measured from top of metal well casing

TABLE 2
LABORATORY ANALYSIS

<u>ANALYSIS</u>	<u>WELL MW-1</u>	<u>WELL MW-2</u>	<u>WELL MW-3</u>	<u>DETECTION LIMIT</u>
BTEX	ND	ND	ND	.50
PAH (Pyrene)	ND	ND	0.12	.10
Other PAH Compounds	ND	ND	ND	.10-.20

ND: None Detected

All values are given in parts per billion (ppb)

Analysis by Modified EPA Method 8015

DISCUSSION

The concentration of pyrene in well MW-3 (0.12 ppb) is well below the groundwater reference concentration of 1.0 ppm (1,000 ppb) per OAR 340-122-045. This situation is not required to be reported to DEQ.

The dramatic shift in groundwater flow direction is likely due to seasonal effects, and is not uncommon in areas such as this which are in close proximity to a major water body and where topography is flat. This back-and-forth groundwater flow could cause the contaminants in the groundwater to remain in this area for a longer period of time.

RECOMMENDATIONS

PBS recommends quarterly sampling of groundwater from the three wells to monitor levels of pyrene and other PAH compounds. Leak-detection monitoring can be performed at the same time, using Hydrocarbon Identification analysis (EPA 8015 Modified) to screen for heavy oil.

Please call me if you have any questions regarding this information.

Sincerely,

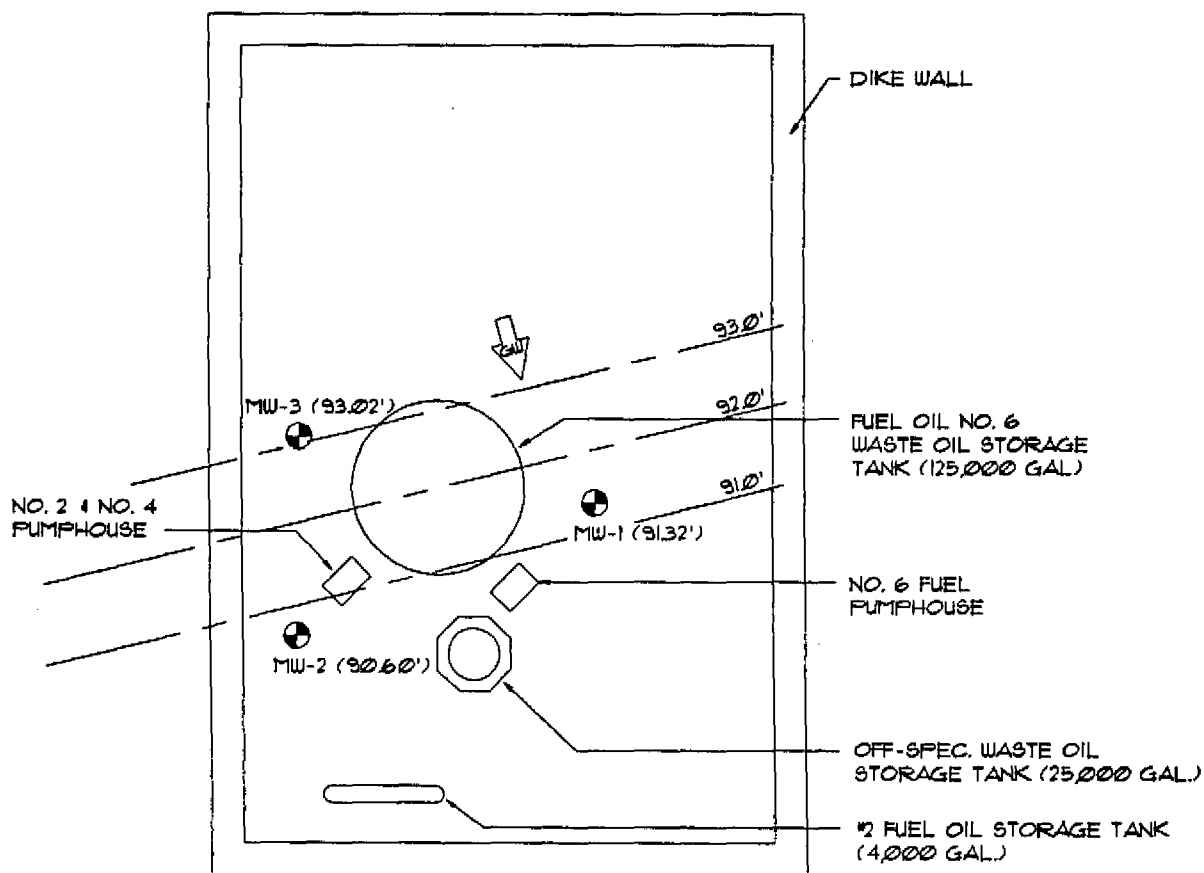


Erik Anderson, R.G.
Director of Environmental Services






Attachments:

- Site Plan
- Laboratory Reports
- Sample Chain of Custody Forms



LEGEND

-  MONITORING WELL LOCATIONS
-  APPROX. DIRECTION OF GROUNDWATER FLOW
-  GROUNDWATER ELEVATION CONTOUR LINES
- (93.02') WATER LEVEL ELEVATIONS (DATUM TOP OF WELL CASING MW-1, ASSUMED 100')

5065.10

03 MAY 93

5065GECM

FIGURE 1
GROUNDWATER ELEVATION CONTOUR MAP (5/3/93)
ASH GROVE CEMENT COMPANY



1220 SW MORRISON
PORTLAND, OREGON
97205
503/246-1838
FAX
503/246-0223

1 OF 1
SECTION TWO
2.1



PACIFIC
ENVIRONMENTAL
LABORATORY INC.

May 12, 1993

PBS Environmental Building
Consultants, Inc.
1220 S.W. Morrison
Portland, OR 97205

Attn: Erik Anderson

Re: JOB #5065.10
PROJECT - ASH GROVE
PEL #93-1290

Enclosed is the lab report for your samples which were received on May 3, 1993.

I. Sample Description

Three Water Samples

The samples were received under a chain of custody.

The samples were received in containers consistent with EPA protocol.

II. Quality Control

No project specific QC was requested. In-house QC data is available upon request.

III. Analytical Results

Test methods may include minor modifications of published methods such as detection limits or parameter lists. Solid and waste samples are reported on an "as received" basis unless otherwise noted.

Compounds not detected are listed under results as ND.

Sincerely,

Howard Holmes
Project Manager

Rob May
Project Manager



METHOD: BTEX per EPA 8020
Results in ug/L (ppb)

<u>Analyte</u>	<u>MW-1</u>	<u>MW-2</u>	<u>MW-3</u>	<u>Detection Limit</u>
Benzene	ND	ND	ND	0.50
Ethylbenzene	ND	ND	ND	0.50
Toluene	ND	ND	ND	0.50
Xylenes (total)	ND	ND	ND	0.50
Date Prepped:	05/04/93	05/04/93	05/04/93	
Date Analyzed:	05/04/93	05/04/93	05/04/93	
<u>Surrogate Recovery (%)</u>				<u>Control Limit</u>
4-Bromofluorobenzene	100	102	100	75-120

<u>Analyte</u>	<u>Method Blank</u>	<u>Detection Limit</u>
Benzene	ND	0.50
Ethylbenzene	ND	0.50
Toluene	ND	0.50
Xylenes (total)	ND	0.50



METHOD: PAH's by EPA 8270-Modified GC/MS in SIM Mode. This method is equivalent to Method 8310 for Oregon UST Fuels Program, per Rick Gates, Oregon DEQ. Detection limits are from SIM analysis.

Results in ug/L (ppb)

<u>Analyte</u>	<u>MW-1</u>	<u>MW-2</u>	<u>MW-3</u>	<u>Detection Limit</u>
Acenaphthene	ND	ND	ND	0.10
Acenaphthylene	ND	ND	ND	0.10
Anthracene	ND	ND	ND	0.10
Benzo(a)anthracene	ND	ND	ND	0.10
Benzo(a)pyrene	ND	ND	ND	0.10
Benzo(b)fluoranthene	ND	ND	ND	0.10
Benzo(g,h,i)perylene	ND	ND	ND	0.10
Benzo(k)fluoranthene	ND	ND	ND	0.10
Chrysene	ND	ND	ND	0.10
Dibenzo(a,h)anthracene	ND	ND	ND	0.10
Fluoranthene	ND	ND	ND	0.10
Fluorene	ND	ND	ND	0.10
Indeno(1,2,3-cd)pyrene	ND	ND	ND	0.20
Naphthalene	ND	ND	ND	0.10
Phenanthrene	ND	ND	ND	0.10
Pyrene	ND	ND	0.12	0.10
Date Prepped:	05/05/93	05/05/93	05/05/93	
Date Analyzed:	05/06/93	05/06/93	05/07/93	
<u>Surrogate Recovery (%)</u>				<u>Control Limit</u>
2-Fluorobiphenyl	63	91	85	43-116
Nitrobenzene-d5	61	90	81	35-114
p-Terphenyl-d14	84	114	104	33-141



METHOD: PAH's by EPA 8270-Modified GC/MS in SIM Mode. This method is equivalent to Method 8310 for Oregon UST Fuels Program, per Rick Gates, Oregon DEQ. Detection limits are from SIM analysis.

Results in ug/L (ppb)

<u>Analyte</u>	<u>Method Blank</u>	<u>Detection Limit</u>
Acenaphthene	ND	0.10
Acenaphthylene	ND	0.10
Anthracene	ND	0.10
Benzo(a)anthracene	ND	0.10
Benzo(a)pyrene	ND	0.10
Benzo(b)fluoranthene	ND	0.10
Benzo(g,h,i)perylene	ND	0.10
Benzo(k)fluoranthene	ND	0.10
Chrysene	ND	0.10
Dibenzo(a,h)anthracene	ND	0.10
Fluoranthene	ND	0.10
Fluorene	ND	0.10
Indeno(1,2,3-cd)pyrene	ND	0.20
Naphthalene	ND	0.10
Phenanthrene	ND	0.10
Pyrene	ND	0.10



9405 S.W. Nimbus Ave.
Beaverton, OR 97005
(503) 644-0660
Fax (503) 644-2202

Appendix 66-000023

COMPANY PBS Environmental PROJECT NAME Ash Grove LAB PROJECT NUMBER 93-1290
PROJECT MANAGER Erik Andersson PROJECT NUMBER 5065.10
COLLECTED BY Erik Andersson P.O. NUMBER _____ RUSH ☐ YES ☒ NO

COMMENTS

IF SAMPLE IS LIQUID & HAS SEDIMENT OR PARTICULATE, SHALL WE:

_____ Test Filtrate Only?
_____ Mix Sample by Shaking?
_____ Test Particulate Only?

IF SAMPLE IS MULTI-PHASED,
SHALL WE:

SHALL WE:

_____ Test Each Phase separately?

_____ Test only ONE Phase? Which Phase?

_____ Mix All Phases by Shaking?

[illegible]

RELINQUISHED BY

ELINQUISHED BY
S. H. Anden


COMPANY

FB S

DATE/TIME

5/3/93 18:08

RECEIVED

RECEIVED BY 

COMPANY

PEL, INC.

RELINQUISHED BY

COMPANY

DATE/TIME

RECEIVED BY

COMPANY

RELINQUISHED BY

COMPANY

DATE/TIME

RECEIVED BY

COMPANY

Note: Samples are discarded 30 days after receipt unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client's expense.



May 14, 1998

Mr. Glenn Dollar
Ash Grove Cement Co.
P.O. Box 83007
Portland, Oregon 97283

**RE: PROPOSAL FOR PROVIDING GROUNDWATER SAMPLING
ASH GROVE CEMENT COMPANY
13939 N. RIVERGATE BLVD.
PORTLAND, OREGON**

Dear Mr. Dollar:

We are pleased to submit this proposal for groundwater sampling at the Ash Grove Cement Company Plant located at 13939 N. Rivergate Blvd., Portland, Oregon.

PROJECT BACKGROUND AND APPROACH:

In December 1992, PBS installed three groundwater monitoring wells around three above-ground oil storage tanks (one 125,000-gallon waste oil tank, one 25,000-gallon off-spec waste oil, and one 4,000-gallon diesel fuel). The purpose of the wells was to provide groundwater sampling points which were to serve as a leak detection system for the tanks.

Initial groundwater sampling indicated diesel-fraction petroleum hydrocarbons in groundwater from two of the wells (MW-1: 690 micrograms per liter - $\mu\text{g/l}$, MW-3: 790 $\mu\text{g/l}$). Follow-up analysis for BTEX compounds and polynuclear aromatic hydrocarbons (PAH's) indicated 0.12 $\mu\text{g/l}$ pyrene in MW-3.

The purpose of the proposed groundwater monitoring is to collect additional data to determine whether concentrations of petroleum hydrocarbons and related constituents are increasing, decreasing, or remaining constant. This information, and information collected during future sampling events, will be used to determine whether the above-ground tanks are leaking product into the groundwater. It is understood that Ash Grove Cement may wish to test the groundwater approximately every two years.

ENVIRONMENTAL
MANAGEMENT
AND CONSULTING

1220 SW Morrison Street, Suite 600 Portland, OR 97205 503/248-1939 Fax 503/248-0223

BOGOTÓ BOULIAND PORTLAND SEATTLE DENVER

Mr. Glenn Dollar

Re: Groundwater Sampling

May 14, 1998

Page 2

SCOPE OF SERVICES:

PBS will provide the following services:

1. **Groundwater Sampling.** PBS will measure water levels in the three wells (MW-1, MW-2 and MW-3), then purge each well of at least three well volumes. Wastewater will be stored onsite in a sealed and labeled container pending results of analysis and disposal by the client. Groundwater samples will be collected using a single-use disposable bailer, collected with minimal agitation and zero headspace in laboratory-provided clean containers. All samples will be delivered with chain-of-custody documentation to the project laboratory.
2. **Laboratory Analysis.** Groundwater samples will be tested for the presence of diesel fraction petroleum hydrocarbons by Northwest Method NWTPH-Dx, BTEX compounds by EPA Method 8020M and polynuclear aromatic hydrocarbons by EPA Method 8270 (SIM). PBS will carefully review the laboratory's quality control testing results to ensure reliability of the sample data.
3. **Report.** A report will be prepared describing the field procedures, results of analyses, laboratory reports and chain-of-custody documentation. The report will include a map of the site indicating the inferred direction of groundwater flow.

FEE: Estimated Time and Materials

PBS Labor	\$ 800
Laboratory Analysis;	
NWTPH-Dx (3 @ \$80 each)	240
EPA 8020M (3 @ \$75 each)	225
EPA 8270-SIM (3 @ \$220 each)	660
Reimbursable Expenses (mileage, equipment, etc.)	<u>50</u>

Total Estimated Project Costs: \$ 1,950

PBS will not exceed this amount without prior approval of the client. All chargeable hours and reimbursable expenses directly related to this project will be billed per the attached General Terms and Conditions for Professional Services (rev. 5/97).

SCHEDULE:

We anticipate that our services can be started within 7 days of receipt of a signed copy of this proposal. The project will be completed within approximately 3 weeks from the start date. If desired, preliminary information can be provided as soon as it becomes available.

Mr. Glenn Dollar

Re: Groundwater Sampling

May 14, 1998

Page 3

This proposal and attachment comprise the entire agreement between the parties. This agreement may not be changed without the prior written consent of the parties. There are no terms and conditions that are not expressed in this agreement. This agreement and its terms and conditions may not be assigned without the prior written consent of the other party.

Please indicate acceptance of this agreement by returning a signed copy of this agreement or a purchase order incorporating the terms of the agreement to my attention.

We appreciate the opportunity to assist you on this project. Please contact me at (503) 417-7594 if you have any questions concerning our proposed scope of work or fees.

Sincerely,

ACCEPTED BY:



Erik Anderson, R.G.
Senior Geologist

Name_____
Signature_____
DateReviewer: *Beni*

i:\wp\proposal\lemer\ph2-usr\ashgrove.e98

Attachment: General Terms and Conditions for Professional Services (rev. 5/97)

6. GENERAL LIABILITY AND LIMITATION THEREOF

PBS agrees to hold the Client harmless and to indemnify and defend the Client for any and all loss, liabilities and damages, claims or action including attorney fees, due to bodily injury or property damage arising directly out of our negligent operational acts. PBS carries comprehensive general liability insurance which, subject to its limits, terms, and conditions, provides protection against liability arising out of bodily injury and property damage that is the direct result of any and all negligence. PBS will provide certificates evidencing such coverage listing Client as additional insured upon request.

7. PROFESSIONAL LIABILITY AND LIMITATION THEREOF

This paragraph relates only to Professional Liability and not General Liability. In performing our professional services, we will use that standard of care and skill ordinarily recognized under similar circumstances by members of our profession in the state and region at the time the services are performed. No other warranty, either expressed or implied, is made in connection with our rendering of professional services.

8. REPORTS AND PRESENTATIONS

The reports of PBS and its subconsultants are for the limited purpose of this contract. PBS will be responsible for its express conclusions and recommendations, but will not be responsible for the interpretation or use of its reports by third parties, without prior written approval by PBS. The Client shall indemnify, defend and hold harmless PBS and its subconsultants from any claims, damages, costs, losses and expenses, including but not limited to attorney fees and costs on arbitration, trial or appeal arising out of third party use of PBS's reports.

9. SAMPLES

All samples will be discarded 30 days after submission of our final report unless other arrangements are made.

10. PAYMENTS TO CONSULTANT

Invoices will be submitted periodically for prior services. An account will become delinquent thirty days after date of billing. It is agreed that a late charge will be added to delinquent accounts at the rate of one-and-one-half percent (1-1/2%) for each thirty days delinquent (provided the rate of such late charge shall not exceed the maximum allowable by the laws of the state in which our office submitting the invoice is located).

11. OTHER PROVISIONS

Neither party shall hold the other responsible for delay in performance caused by acts of God, strikes, lockouts, weather, accidents, or other events beyond the control of the other or the other's employees and agents.

One or more waivers by either party of any provision, term, condition or covenant, shall not be construed by the other party as a waiver of a subsequent breach of the same by the other party by providing written notice.

An opinion of abatement, remediation and restoration costs prepared by PBS represents our judgement as a professional. Since we have no control over the cost of labor and material, or over competitive bidding or market conditions, we do not guarantee the accuracy of our opinion as compared to contractor bids of actual cost to the Client.

It is understood and agreed by both parties that PBS, in performing professional services for the Client with respect to hazardous substances, will make recommendations to the Client but does not have the authority or responsibility to decide where disposal or treatment takes place, nor to designate how or by whom the hazardous substances are to be transported for disposal or treatment. It is understood that PBS is not the generator and does not own the hazardous waste discovered, handled or removed from the owner's property.

In the event there is a dispute between PBS and the Client concerning the performance of any provision in this agreement, the losing party shall pay the prevailing party reasonable attorney's fees and costs on trial or appeal. In addition, Client agrees to pay PBS for all employee time, costs, and witness costs incurred for collection activity.

This agreement can be terminated at any time by either party.

12. STANDARD OF CARE

PBS's services are conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the profession practicing in a similar geographical area under similar conditions (i.e. PBS utilizes sampling protocols which are generally accepted and informative means of conducting investigations. However, these protocols may not result in conclusions with 100% certainty). This standard of care shall be determined as of the time PBS performs its services and not as of any other time. No other warranty, express or implied, is made. PBS's interpretations and recommendations will be based solely on information which is made available to PBS by the Owner or by the results of samples, surveys or other investigations performed by PBS. By entering into this agreement, PBS represents that all personnel to be assigned to perform the work described in this project are fully qualified to perform the work to which they are assigned in a competent and professional manner. PBS's professional services shall incorporate and comply with those federal, state and local laws, regulations, codes and standards that are applicable at the time PBS renders its services.



June 22, 1998

Mr. Glenn Dollar
Ash Grove Cement Company
13939 N. Rivergate Blvd.
Portland, Oregon 97203

Report of Findings
Groundwater Monitoring - May 1998
Ash Grove Cement Lime Plant
PBS Project #12730.00

1.0 INTRODUCTION AND BACKGROUND

The following report presents the results of the recent round of groundwater sampling at the Ash Grove Cement Company Lime Plant at 13939 N. Rivergate Boulevard, Portland, Oregon. The purpose of the investigation was to monitor the groundwater quality in the tank farm area to identify potential leakage from the tanks into the shallow groundwater.

The tank farm consists of one 420,000-gallon waste oil tank, one 25,000-gallon off-spec waste oil tank, and one 4,000-gallon #2 fuel oil tank. All tanks are above-ground, located within an area enclosed within a dike consisting of a 4-foot high concrete wall. The ground surface within the diked area is paved with concrete. The two larger tanks are oriented vertically and rest on flat concrete bases. The smaller tank is oriented horizontally and is mounted on concrete saddles. The 25,000-gallon tank had previously contained diesel fuel.

In December 1992, PBS installed three groundwater monitoring wells in the tank farm area, each to a depth of 15 feet. Groundwater samples collected from wells MW-1 and MW-3 contained 690 micrograms per liter ($\mu\text{g/l}$) and 790 $\mu\text{g/l}$ diesel-fraction petroleum hydrocarbons. Follow-up analysis of samples from the wells for benzene, toluene, ethylbenzene, and xylenes (BTEX) and polynuclear aromatic hydrocarbons (PAHs) indicated the presence of pyrene in the water sample from well MW-3 at a concentration of 0.12 $\mu\text{g/l}$. No other PAHs or BTEX were detected in any of the samples.

ENVIRONMENTAL
MANAGEMENT
AND CONSULTING

1220 SW Morrison Street, Suite 600 Portland, OR 97205 503/248-1939 Fax 503/248-0223

EUGENE RICHLAND PORTLAND SEATTLE DENVER

2.0 MONITORING WELL SAMPLING AND ANALYSIS

PBS sampled the three monitoring wells on May 27, 1998, with the assistance of Glenn Dollar, Ash Grove Cement Company.

Prior to purging, static water levels were measured in each well using an electronic water level indicator. Each well was purged using a dedicated disposable polyethylene bailer. Physical and chemical parameters (temperature, conductivity, pH) were measured after removal of each well volume to assess stability of the parameters, which serve to indicate whether uniformity has been achieved, and all "non-representative" groundwater has been purged from the well. Upon achieving less than 10% variation between parameters over three consecutive well volumes, the groundwater at the well was considered to be representative of local groundwater conditions, and the well was sampled.

Groundwater samples were collected from the bailers and placed into laboratory-furnished sample containers. Water samples were analyzed for BTEX (EPA Method 8020M), PAHs (EPA Method 8270 SIM mode), and Total Petroleum Hydrocarbons (Northwest Method NWTPH-HCID). The samples were placed in an ice chest and transported by hand, under sample chain of custody, to North Creek Analytical Laboratories, Beaverton, Oregon.

All purged water was placed in a 55-gallon steel open-top drum and left on-site for later disposal.

3.0 GROUNDWATER FLOW DIRECTION

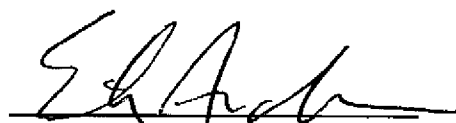
Based on the relative elevations of the piezometric surface between the three wells, groundwater is inferred to flow locally to the west, toward the Willamette River. Therefore, wells MW-2 and MW-3 are located in a hydraulically downgradient location from the three storage tanks.

4.0 LABORATORY RESULTS

No BTEX, PAHs, or diesel or heavy oil range petroleum hydrocarbons were detected in any of the groundwater samples. A summary of the field measurements is presented in Table 1. A summary of the laboratory analyses is presented in Table 2.

5.0 CONCLUSIONS

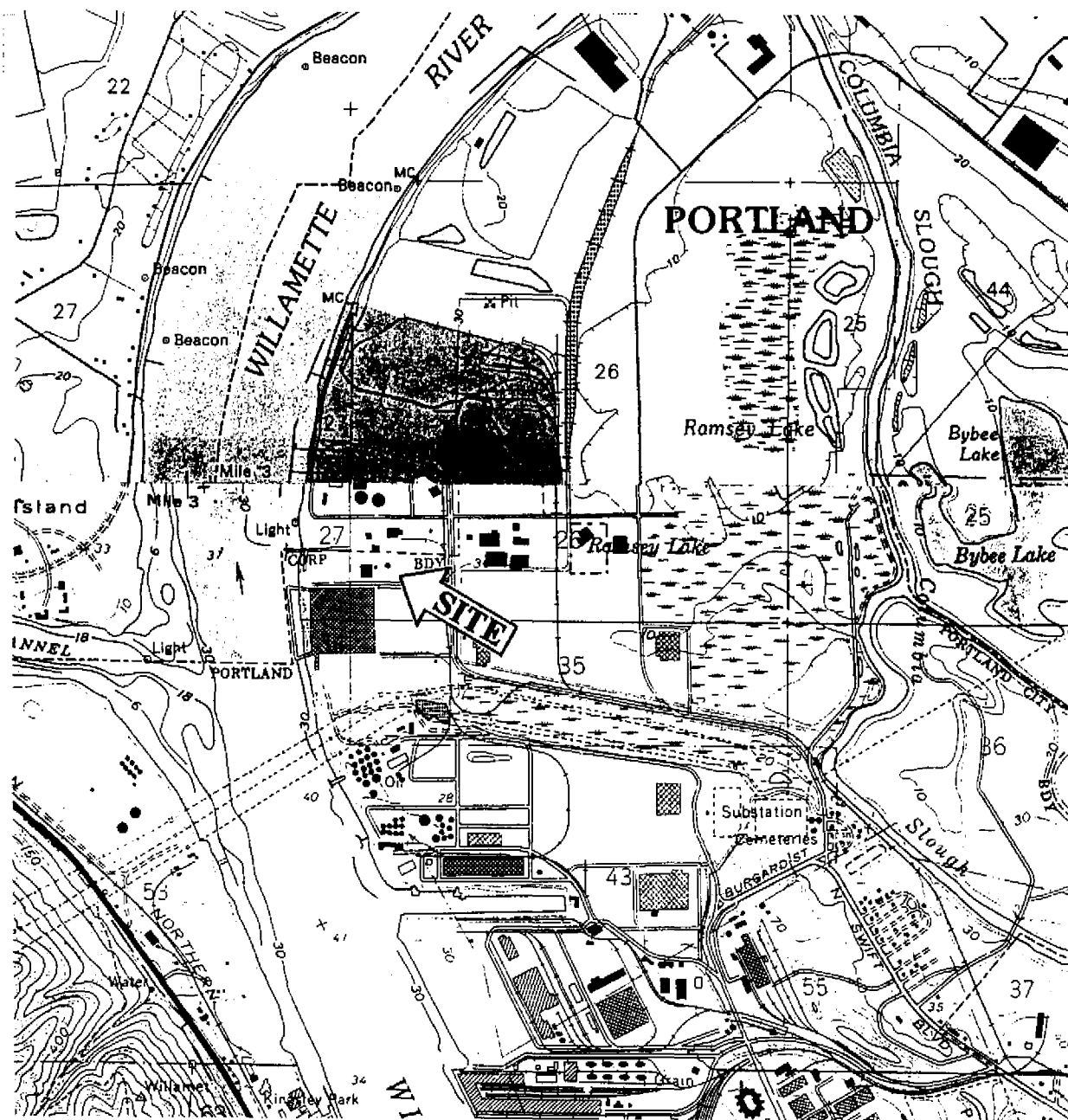
The laboratory analyses indicate that no petroleum hydrocarbons, BTEX, or PAHs are present in the groundwater at concentrations above their detection limits. Continued periodic sampling of groundwater is recommended as a means of detecting leakage from the base of the tanks.



Erik Anderson, R.G.
Registered Geologist



Attachments: Table 1 - Monitoring Well Data Summary
Table 2 -Laboratory Results of Groundwater Analysis
Figure 1 - Site Location Map
Figure 2 - Groundwater Elevation Contour Map (5/27/98)
Laboratory Report and Sample Chain of Custody



SOURCE: USGS SAUVIE ISLAND QUADRANGLE, OR

12730.00

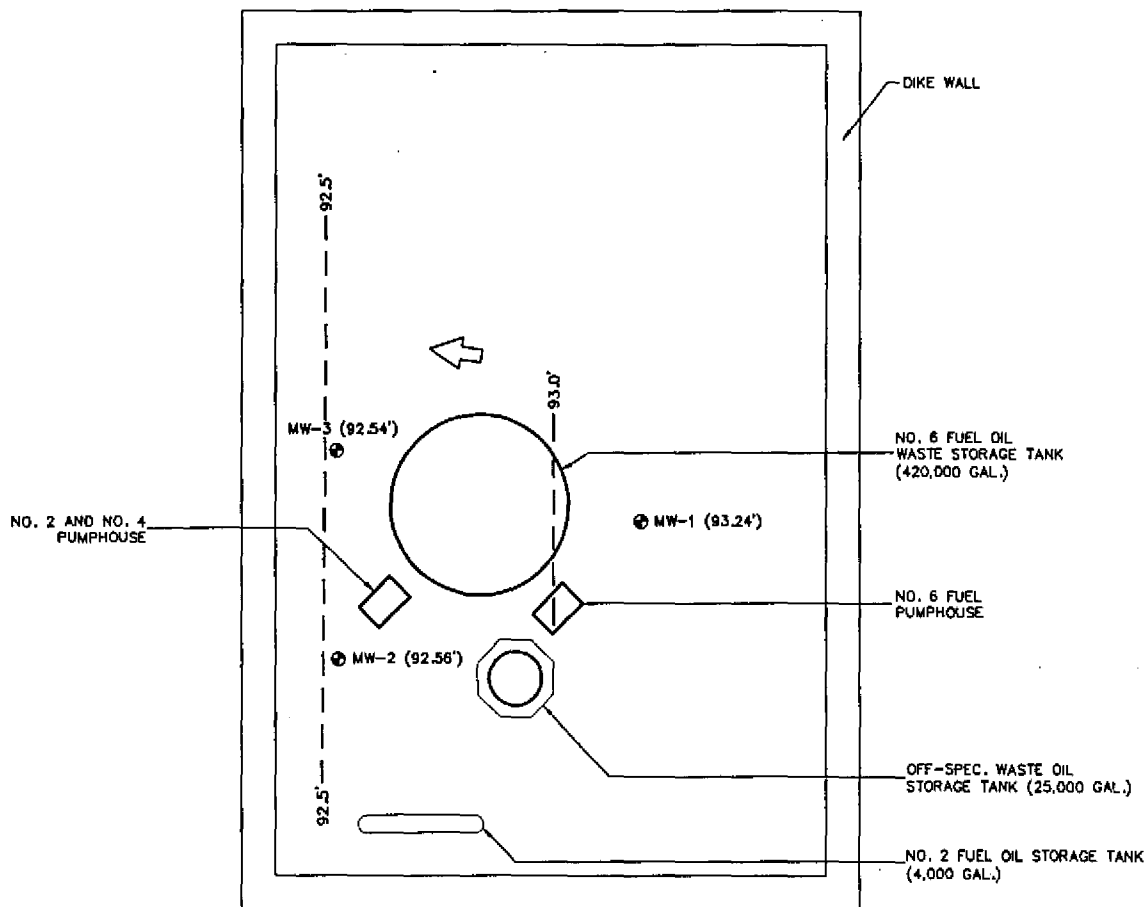
MAY 1998

SITE LOCATION MAP
GROUNDWATER ELEVATION CONTOUR MAP (5/27/98)
ASH GROVE CEMENT COMPANY



1220 SW MORRISON
PORTLAND, OREGON
97205
(503) 248-1939
FAX
(503) 248-0223

FIGURE 1



LEGEND



MONITORING WELL LOCATIONS



APPROXIMATE DIRECTION OF GROUNDWATER FLOW



GROUNDWATER ELEVATION CONTOUR LINES

(93.02') WATER LEVEL ELEVATIONS (DATUM TOP OF WELL CASING MW-1, ASSUMED 100')



NOT TO SCALE

12730.00

GROUNDWATER ELEVATION CONTOUR MAP
(5/27/98)
ASH GROVE CEMENT COMPANY



1220 SW MORRISON
PORTLAND, OREGON
97205
(503) 248-1939
FAX
(503) 248-0223

FIGURE 2

MAY 1998

Table 1
Monitoring Well Data Summary

Monitor Well	Screened Inter-val ^(a)	Well Diameter (inches)	Total Depth of Well	Depth to Water		Top of Casing Elev. ^(c)	Groundwater Elevation	
				Date	Depth ^(b)		Date	Elev.
MW-1	10-15	2	15	05/27/98	6.76	100.00	05/27/98	93.24
MW-2	10-15	2	15	05/27/98	6.64	99.20	05/27/98	92.56
MW-3	10-15	2	15	05/27/98	6.99	99.53	05/27/98	92.54

(a) Feet below ground surface

(b) Feet below top of well casing

(c) Datum: Top of well casing - MW-1, assumed 100.00 feet.

Table 2
Laboratory Results of Groundwater Analysis

	Sample Number			Regulatory Level ⁽¹⁾
	MW-1	MW-2	MW-3	
Sample Date	05/27/98	05/27/98	05/27/98	
<u>Total Petroleum Hydrocarbons</u> ⁽²⁾	ND	ND	ND	NE
<u>Volatile Organics</u> ⁽³⁾ (µg/l)				
Benzene	<0.5	<0.5	<0.5	5
Toluene	<0.5	<0.5	<0.5	1,000
Ethylbenzene	<0.5	<0.5	<0.5	700
Xylenes	<1.0	<1.0	<1.0	10,000
<u>Polynuclear Aromatic Hydrocarbons</u> ⁽⁴⁾	ND	ND	ND	Varies

ND: Not detected above the Reporting Limit

NE: Cleanup Levels not established

(1) Based on Oregon Underground Storage Tank Groundwater Cleanup Levels (OAR 340-122-242(4))

(2) Northwest Method NWTPH-Dx

(3) EPA Method 8020M

(4) EPA Method 8270 - SIM Mode

American Environmental Network, Inc.

17400 SW Upper Boones Ferry Road • Suite 270 • Portland, OR 97224 • (503) 684-0447

Eric Anderson
PBS Environmental
1220 SW Morrison
Portland, OR 97205


Date: 06/10/1998
AEN Account No.: 90064
AEN Job Number: 98.01323

Project: Ash Grove
Location: 12730.00

Sample analysis in support of the project referenced above has been completed and results are presented on the following pages. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Sample Number	Sample Description	Matrix Type	Date Taken	Date Received
103951	MW-1	Water	05/27/1998	05/28/1998
103952	MW-2	Water	05/27/1998	05/28/1998
103953	MW-3	Water	05/27/1998	05/28/1998

Approved by:


Jenna Gorham
Project Manager
AEN, INC.


Technical Review
AEN, INC.

The results from these samples relate only to the items tested. This report shall not be reproduced, except in full, without the written approval of the laboratory.

ANALYTICAL SERVICES FOR THE ENVIRONMENT

Appendix66-000035

ANALYTICAL REPORT

Eric Anderson
PBS Environmental
1220 SW Morrison
Portland, OR 97205

06/10/1998
Job No.: 98.01323

Page: 2

Project Name: Ash Grove
Date Received: 05/28/1998

Sample Number 103951
Sample Description MW-1

<u>PARAMETERS</u>	<u>METHODS</u>	<u>RESULTS</u>	<u>REPORT LIMIT</u>	<u>UNITS</u>	<u>DATE ANALYZED</u>	<u>FLAG</u>
BTEX (W)						
Dilution Factor	8020	1			05/29/1998	
Benzene	8020	ND	0.5	ug/L	05/29/1998	
Toluene	8020	ND	0.5	ug/L	05/29/1998	
Ethyl Benzene	8020	ND	0.5	ug/L	05/29/1998	
Xylenes, total	8020	ND	1.5	ug/L	05/29/1998	
PAH BY GC/MS SIM PREP		-			06/01/1998	
PAH BY GC/MS SIM (W)						
Dilution Factor	8270M	1			06/02/1998	
Naphthalene	8270M	ND	0.1	ug/L	06/02/1998	
Acenaphthylene	8270M	ND	0.1	ug/L	06/02/1998	
Acenaphthene	8270M	ND	0.1	ug/L	06/02/1998	
Fluorene	8270M	ND	0.1	ug/L	06/02/1998	
Phenanthrene	8270M	ND	0.1	ug/L	06/02/1998	
Anthracene	8270M	ND	0.1	ug/L	06/02/1998	
Fluoranthene	8270M	ND	0.1	ug/L	06/02/1998	
Pyrene	8270M	ND	0.1	ug/L	06/02/1998	
Benzo(a)anthracene	8270M	ND	0.1	ug/L	06/02/1998	
Chrysene	8270M	ND	0.1	ug/L	06/02/1998	
Benzo(b)fluoranthene	8270M	ND	0.1	ug/L	06/02/1998	
Benzo(k)fluoranthene	8270M	ND	0.1	ug/L	06/02/1998	
Benzo(a)pyrene	8270M	ND	0.1	ug/L	06/02/1998	
Indeno(1,2,3-cd)pyrene	8270M	ND	0.1	ug/L	06/02/1998	
Dibenzo(a,h)anthracene	8270M	ND	0.1	ug/L	06/02/1998	
Benzo(g,h,i)perylene	8270M	ND	0.1	ug/L	06/02/1998	
NWTPH-Dx (W) Prep	NWTPH-Dx	-			06/02/1998	
NWTPH-Dx (W)						
Dilution Factor	NWTPH-Dx	1			06/02/1998	
Diesel Range Organics C10-C28	NWTPH-Dx	ND	0.25	mg/L	06/02/1998	
Heavy Oil Range (C28-C32)	NWTPH-Dx	ND	0.50	mg/L	06/02/1998	

A sample result of ND indicates the parameter was Not Detected at the reporting limit.

American Environmental Network, Inc. (503) 684-0447 (503) 620-0393 FAX
17400 SW Upper Boones Ferry Rd., Suite 270, Portland, OR 97224

ANALYTICAL REPORT

Eric Anderson
PBS Environmental
1220 SW Morrison
Portland, OR 97205

06/10/1998
Job No.: 98.01323

Page: 3

Project Name: Ash Grove
Date Received: 05/28/1998

Sample Number Sample Description
103952 MW-2

<u>PARAMETERS</u>	<u>METHODS</u>	<u>RESULTS</u>	<u>REPORT LIMIT</u>	<u>UNITS</u>	<u>DATE ANALYZED</u>	<u>FLAG</u>
BTEX (W)						
Dilution Factor	8020	1			05/29/1998	
Benzene	8020	ND	0.5	ug/L	05/29/1998	
Toluene	8020	ND	0.5	ug/L	05/29/1998	
Ethyl Benzene	8020	ND	0.5	ug/L	05/29/1998	
Xylenes, total	8020	ND	1.5	ug/L	05/29/1998	
PAH BY GC/MS SIM PREP		-			06/01/1998	
PAH BY GC/MS SIM (W)						
Dilution Factor	8270M	1			06/02/1998	
Naphthalene	8270M	ND	0.1	ug/L	06/02/1998	
Acenaphthylene	8270M	ND	0.1	ug/L	06/02/1998	
Acenaphthene	8270M	ND	0.1	ug/L	06/02/1998	
Fluorene	8270M	ND	0.1	ug/L	06/02/1998	
Phenanthrene	8270M	ND	0.1	ug/L	06/02/1998	
Anthracene	8270M	ND	0.1	ug/L	06/02/1998	
Fluoranthene	8270M	ND	0.1	ug/L	06/02/1998	
Pyrene	8270M	ND	0.1	ug/L	06/02/1998	
Benzo(a)anthracene	8270M	ND	0.1	ug/L	06/02/1998	
Chrysene	8270M	ND	0.1	ug/L	06/02/1998	
Benzo(b)fluoranthene	8270M	ND	0.1	ug/L	06/02/1998	
Benzo(k)fluoranthene	8270M	ND	0.1	ug/L	06/02/1998	
Benzo(a)pyrene	8270M	ND	0.1	ug/L	06/02/1998	
Indeno(1,2,3-cd)pyrene	8270M	ND	0.1	ug/L	06/02/1998	
Dibenzo(a,h)anthracene	8270M	ND	0.1	ug/L	06/02/1998	
Benzo(g,h,i)perylene	8270M	ND	0.1	ug/L	06/02/1998	
NWTPH-Dx (W) Prep	NWTPH-Dx	-			06/02/1998	
NWTPH-Dx (W)						
Dilution Factor	NWTPH-Dx	1			06/02/1998	
Diesel Range Organics C10-C28	NWTPH-Dx	ND	0.25	mg/L	06/02/1998	
Heavy Oil Range (C28-C32)	NWTPH-Dx	ND	0.50	mg/L	06/02/1998	

A sample result of ND indicates the parameter was Not Detected at the reporting limit.

American Environmental Network, Inc. (503) 684-0447 (503) 620-0393 FAX
17400 SW Upper Boones Ferry Rd., Suite 270, Portland, OR 97224

ANALYTICAL REPORT

Eric Anderson
PBS Environmental
1220 SW Morrison
Portland, OR 97205

06/10/1998
Job No.: 98.01323

Page: 4

Project Name: Ash Grove
Date Received: 05/28/1998

Sample Number 103953
Sample Description MW-3

<u>PARAMETERS</u>	<u>METHODS</u>	<u>RESULTS</u>	<u>REPORT LIMIT</u>	<u>UNITS</u>	<u>DATE ANALYZED</u>	<u>FLAG</u>
BTEX (W)						
Dilution Factor	8020	1			06/01/1998	
Benzene	8020	ND	0.5	ug/L	06/01/1998	
Toluene	8020	ND	0.5	ug/L	06/01/1998	
Ethyl Benzene	8020	ND	0.5	ug/L	06/01/1998	
Xylenes, total	8020	ND	1.5	ug/L	06/01/1998	
PAH BY GC/MS SIM PREP		-			06/01/1998	
PAH BY GC/MS SIM (W)						
Dilution Factor	8270M	1			06/02/1998	
Naphthalene	8270M	ND	0.1	ug/L	06/02/1998	
Acenaphthylene	8270M	ND	0.1	ug/L	06/02/1998	
Acenaphthene	8270M	ND	0.1	ug/L	06/02/1998	
Fluorene	8270M	ND	0.1	ug/L	06/02/1998	
Phenanthrene	8270M	ND	0.1	ug/L	06/02/1998	
Anthracene	8270M	ND	0.1	ug/L	06/02/1998	
Fluoranthene	8270M	ND	0.1	ug/L	06/02/1998	
Pyrene	8270M	ND	0.1	ug/L	06/02/1998	
Benzo(a)anthracene	8270M	ND	0.1	ug/L	06/02/1998	
Chrysene	8270M	ND	0.1	ug/L	06/02/1998	
Benzo(b)fluoranthene	8270M	ND	0.1	ug/L	06/02/1998	
Benzo(k)fluoranthene	8270M	ND	0.1	ug/L	06/02/1998	
Benzo(a)pyrene	8270M	ND	0.1	ug/L	06/02/1998	
Indeno(1,2,3-cd)pyrene	8270M	ND	0.1	ug/L	06/02/1998	
Dibenzo(a,h)anthracene	8270M	ND	0.1	ug/L	06/02/1998	
Benzo(g,h,i)perylene	8270M	ND	0.1	ug/L	06/02/1998	
NWTPH-Dx (W) Prep	NWTPH-Dx	-			06/02/1998	
NWTPH-Dx (W)						
Dilution Factor	NWTPH-Dx	1			06/02/1998	
Diesel Range Organics C10-C28	NWTPH-Dx	ND	0.25	mg/L	06/02/1998	
Heavy Oil Range (C28-C32)	NWTPH-Dx	ND	0.50	mg/L	06/02/1998	

A sample result of ND indicates the parameter was Not Detected at the reporting limit.

American Environmental Network, Inc. (503) 684-0447 (503) 620-0393 FAX
17400 SW Upper Boones Ferry Rd., Suite 270, Portland, OR 97224

SURROGATE REPORT

Eric Anderson
PBS Environmental
1220 SW Morrison
Portland, OR 97205

06/10/1998
Job No.: 98.01323
Page: 5

Project Name: Ash Grove
Date Received: 05/28/1998

<u>SURROGATES</u>	<u>METHODS</u>	<u>RESULTS</u>	<u>DATE ANALYZED</u>	<u>FLAG</u>
-------------------	----------------	----------------	----------------------	-------------

Sample Number	Sample Description
103951	MW-1

aaa-TFT (Surr.)	8020	103	%	05/29/1998
Nitrobenzene-d5 (Surr.)	8270M	76	%	06/02/1998
2-Fluorobiphenyl (Surr.)	8270M	78	%	06/02/1998
Terphenyl-d14 (Surr.)	8270M	70	%	06/02/1998
o-terphenyl (Surr.)	NWTPH-Dx	59	%	06/02/1998

Sample Number	Sample Description
103952	MW-2

aaa-TFT (Surr.)	8020	106	%	05/29/1998
Nitrobenzene-d5 (Surr.)	8270M	78	%	06/02/1998
2-Fluorobiphenyl (Surr.)	8270M	87	%	06/02/1998
Terphenyl-d14 (Surr.)	8270M	84	%	06/02/1998
o-terphenyl (Surr.)	NWTPH-Dx	71	%	06/02/1998

Sample Number	Sample Description
103953	MW-3

aaa-TFT (Surr.)	8020	99	%	06/01/1998
Nitrobenzene-d5 (Surr.)	8270M	68	%	06/02/1998
2-Fluorobiphenyl (Surr.)	8270M	77	%	06/02/1998
Terphenyl-d14 (Surr.)	8270M	79	%	06/02/1998
o-terphenyl (Surr.)	NWTPH-Dx	71	%	06/02/1998

QUALITY CONTROL REPORT CONTINUING CALIBRATION VERIFICATION

PBS Environmental
1220 SW Morrison
Portland, OR 97205

Date: 06/10/1998

Job Number: 98.01323

Contact: Eric Anderson
Project: Ash Grove

Analyte	CCV			
	True Concentration	Concentration Found	Percent Recovery	Date Analyzed
BTEX (W)				
Benzene	40.0	36.8	92.0	05/29/1998
Toluene	40.0	36.7	91.8	05/29/1998
Ethyl Benzene	40.0	36.8	92.0	05/29/1998
Xylenes, total	120	112	93.3	05/29/1998
aaa-TFT (Surr.)	100	97	97.0	05/29/1998
PAH BY GC/MS SIM (W)				
Naphthalene	1.0	1.19	119.0	06/02/1998
Acenaphthylene	1.0	0.97	97.0	06/02/1998
Acenaphthene	1.0	0.96	96.0	06/02/1998
Fluorene	1.0	0.92	92.0	06/02/1998
Phenanthrene	1.0	0.96	96.0	06/02/1998
Anthracene	1.0	0.98	98.0	06/02/1998
Fluoranthene	1.0	0.98	98.0	06/02/1998
Pyrene	1.0	0.96	96.0	06/02/1998
Benzo(a)anthracene	1.0	1.02	102.0	06/02/1998
Chrysene	1.0	0.95	95.0	06/02/1998
Benzo(b)fluoranthene	1.0	1.05	105.0	06/02/1998
Benzo(k)fluoranthene	1.0	0.99	99.0	06/02/1998
Benzo(a)pyrene	1.0	1.06	106.0	06/02/1998
Indeno(1,2,3-cd)pyrene	1.0	0.93	93.0	06/02/1998
Dibenzo(a,h)anthracene	1.0	0.92	92.0	06/02/1998
Benzo(g,h,i)perylene	1.0	0.91	91.0	06/02/1998
NWTPH-Dx (W)				
Diesel Range Organics C10-C28	404	390	96.5	06/02/1998
Heavy Oil Range (C28-C32)	408	450	110.3	06/02/1998
NWTPH-Dx (W)				
Diesel Range Organics C10-C28	404	366	90.6	06/02/1998
Heavy Oil Range (C28-C32)	408	438	107.4	06/02/1998

CCV - Continuing Calibration Verification

American Environmental Network, Inc. (503)684-0447 (503)620-0393 FAX
17400 SW Upper Boones Ferry Rd., Suite 270, Portland, OR 97224

QUALITY CONTROL REPORT LABORATORY CONTROL STANDARD

PBS Environmental
1220 SW Morrison
Portland, OR 97205

Date: 06/10/1998

Job Number: 98.01323

Contact: Eric Anderson
Project: Ash Grove

Analyte	LCS		LCS % Recovery	Flags	Date Analyzed
	True Concentration	Concentration Found			
PAH BY GC/MS SIM (W)					
Naphthalene	1.0	0.83	83.0		06/02/1998
Acenaphthylene	1.0	0.87	87.0		06/02/1998
Acenaphthene	1.0	0.89	89.0		06/02/1998
Fluorene	1.0	0.87	87.0		06/02/1998
Phenanthrene	1.0	0.93	93.0		06/02/1998
Anthracene	1.0	0.91	91.0		06/02/1998
Fluoranthene	1.0	0.95	95.0		06/02/1998
Pyrene	1.0	1.02	102.0		06/02/1998
Benzo(a)anthracene	1.0	0.96	96.0		06/02/1998
Chrysene	1.0	0.96	96.0		06/02/1998
Benzo(b)fluoranthene	1.0	1.06	106.0		06/02/1998
Benzo(k)fluoranthene	1.0	1.00	100.0		06/02/1998
Benzo(a)pyrene	1.0	0.98	98.0		06/02/1998
Indeno(1,2,3-cd)pyrene	1.0	1.03	103.0		06/02/1998
Dibenzo(a,h)anthracene	1.0	1.00	100.0		06/02/1998
Benzo(g,h,i)perylene	1.0	1.07	107.0		06/02/1998
PAH BY GC/MS SIM (W)					
Naphthalene	1.0	0.91	91.0		06/02/1998
Acenaphthylene	1.0	0.94	94.0		06/02/1998
Acenaphthene	1.0	0.95	95.0		06/02/1998
Fluorene	1.0	0.90	90.0		06/02/1998
Phenanthrene	1.0	0.95	95.0		06/02/1998
Anthracene	1.0	0.94	94.0		06/02/1998
Fluoranthene	1.0	0.98	98.0		06/02/1998
Pyrene	1.0	1.03	103.0		06/02/1998
Benzo(a)anthracene	1.0	1.00	100.0		06/02/1998
Chrysene	1.0	0.98	98.0		06/02/1998
Benzo(b)fluoranthene	1.0	1.05	105.0		06/02/1998
Benzo(k)fluoranthene	1.0	1.01	101.0		06/02/1998

LCS - Laboratory Control Standard

American Environmental Network, Inc. (503)684-0447 (503)620-0393 FAX
17400 SW Upper Boones Ferry Rd., Suite 270, Portland OR 97224

QUALITY CONTROL REPORT LABORATORY CONTROL STANDARD

PBS Environmental
1220 SW Morrison
Portland, OR 97205

Date: 06/10/1998
Job Number: 98.01323

Contact: Eric Anderson
Project: Ash Grove

Analyte	LCS		LCS % Recovery	Flags	Date Analyzed
	True Concentration	Concentration Found			
Benzo(a)pyrene	1.0	1.00	100.0		06/02/1998
Indeno(1,2,3-cd)pyrene	1.0	1.05	105.0		06/02/1998
Dibenzo(a,h)anthracene	1.0	1.02	102.0		06/02/1998
Benzo(g,h,i)perylene	1.0	1.09	109.0		06/02/1998
NWTPH-Dx (W)					
Diesel Range Organics C10-C28	2.540	1.600	63.0		06/02/1998
NWTPH-Dx (W)					
Diesel Range Organics C10-C28	2.540	1.740	68.5		06/02/1998

LCS - Laboratory Control Standard

American Environmental Network, Inc. (503) 684-0447 (503) 620-0393 FAX
17400 SW Upper Boones Ferry Rd., Suite 270, Portland OR 97224

QUALITY CONTROL REPORT MATRIX SPIKE/MATRIX SPIKE DUPLICATE

PBS Environmental
1220 SW Morrison
Portland, OR 97205

Date: 06/10/1998

Job Number: 98.01323

Contact: Eric Anderson
Project: Ash Grove

Analyte	Matrix	Sample	Spike	Units	Percent	MSD	MSD	Spike	Units	Percent	MS/MSD	
	Spike					Result					RPD	Flags
BTEX (W)												
Benzene	37.4	ND	40.0	ug/L	93.5	37.1	40.0	ug/L	92.8		0.8	
Toluene	38.1	ND	40.0	ug/L	95.3	37.5	40.0	ug/L	93.8		1.6	
Ethyl Benzene	37.8	ND	40.0	ug/L	94.5	37.6	40.0	ug/L	94.0		0.5	
Xylenes, total	115	ND	120	ug/L	95.8	114	120	ug/L	95.0		0.8	

QC Sample:

NOTE: Matrix Spike Samples may not be samples from this job.

MS = Matrix Spike

MSD = Matrix Spike Duplicate

RPD = Relative Percent Difference

dil. = Diluted Out

American Environmental Network, Inc. (503)684-0447 (503)620-0393 FAX
17400 SW Upper Boones Ferry Rd., Portland, OR 97224

QUALITY CONTROL REPORT BLANKS

PBS Environmental
1220 SW Morrison
Portland, OR 97205

Date: 06/10/1998

Job Number: 98.01323

Contact: Eric Anderson
Project: Ash Grove
Location: 12730.00

Analyte	Blank Analysis	Report Limit	Units	Date Analyzed
BTEX (W)				
Dilution Factor	1			05/29/1998
Benzene	ND	0.5	ug/L	05/29/1998
Toluene	ND	0.5	ug/L	05/29/1998
Ethyl Benzene	ND	0.5	ug/L	05/29/1998
Xylenes, total	ND	1.5	ug/L	05/29/1998
aaa-TFT (Surr.)	104		%	05/29/1998
PAH BY GC/MS SIM (W)				
Naphthalene	ND	0.1	ug/L	06/02/1998
Acenaphthylene	ND	0.1	ug/L	06/02/1998
Acenaphthene	ND	0.1	ug/L	06/02/1998
Fluorene	ND	0.1	ug/L	06/02/1998
Phenanthrene	ND	0.1	ug/L	06/02/1998
Anthracene	ND	0.1	ug/L	06/02/1998
Fluoranthene	ND	0.1	ug/L	06/02/1998
Pyrene	ND	0.1	ug/L	06/02/1998
Benzo(a)anthracene	ND	0.1	ug/L	06/02/1998
Chrysene	ND	0.1	ug/L	06/02/1998
Benzo(b)fluoranthene	ND	0.1	ug/L	06/02/1998
Benzo(k)fluoranthene	ND	0.1	ug/L	06/02/1998
Benzo(a)pyrene	ND	0.1	ug/L	06/02/1998
Indeno(1,2,3-cd)pyrene	ND	0.1	ug/L	06/02/1998
Dibenzo(a,h)anthracene	ND	0.1	ug/L	06/02/1998
Benzo(g,h,i)perylene	ND	0.1	ug/L	06/02/1998
Nitrobenzene-d5 (Surr.)	77		%	06/02/1998
2-Fluorobiphenyl (Surr.)	86		%	06/02/1998

American Environmental Network, Inc. (503) 684-0447 (503) 620-0393 FAX
17400 SW Upper Boones Ferry Rd., Portland, OR 97224

QUALITY CONTROL REPORT BLANKS

PBS Environmental
1220 SW Morrison
Portland, OR 97205

Date: 06/10/1998

Job Number: 98.01323

Contact: Eric Anderson
Project: Ash Grove
Location: 12730.00

Analyte	Blank Analysis	Report Limit	Units	Date Analyzed
Terphenyl-d14 (Surr.)	101		%	06/02/1998
NWTPH-Dx (W)				
Diesel Range Organics C10-C28	ND	0.25	mg/L	06/02/1998
Heavy Oil Range (C28-C32)	ND	0.50	mg/L	06/02/1998
o-terphenyl (Surr.)	70		%	06/02/1998

American Environmental Network, Inc. (503) 694-0447 (503) 620-0393 FAX
17400 SW Upper Boones Ferry Rd., Portland, OR 97224

QUALITY CONTROL REPORT DUPLICATES

PBS Environmental
1220 SW Morrison
Portland, OR 97205

Date: 06/10/1998
Job Number: 98.01323

Contact: Eric Anderson
Project: Ash Grove

Analyte	Original Analysis	Duplicate Analysis	Units	RPD	Date Analyzed	Flag
NWTPH-Dx (W)						
Dilution Factor	1	1		0.0	06/02/1998	
Diesel Range Organics C10-C28	ND	ND	mg/L		06/02/1998	
Heavy Oil Range (C28-C32)	ND	ND	mg/L		06/02/1998	

NOTE: Duplicates may not be samples from this job.

RPD - Relative Percent Difference

FLAG GLOSSARY

A	This sample does not have a typical gasoline pattern.
B1	This sample does not have a typical diesel pattern.
B	Analyte found in the associated blank as well as the sample.
C	The sample contains a lighter hydrocarbon than gasoline.
CN	See case narrative
CS	Outside control limits or unusual matrix; see case narrative.
D	The sample extends to a heavier hydrocarbon range than gasoline.
d	Results on a dry weight basis
DIL	Result was calculated from dilution.
E	The sample extends to a lighter hydrocarbon range than diesel.
F	The sample extends to a heavier hydrocarbon range than diesel.
G	The positive result for gasoline is due to single component contamination.
I	The oil pattern for this sample is not typical.
J	The result for this compound is an estimated concentration.
L	The LCS recovery exceeded control limits. See the LCS page of this report.
LM	The LCS recovery exceeded control limits; the MS/MSD were in control validating the batch.
M	MS and/or MSD percent recovery exceeds control limits.
MD	Unable to calculate MS/MSD recovery due to high amount of analyte; greater than 4 times spike level.
MR	The MS/MSD RPD is greater than method criteria. The sample was re-extracted and re-analyzed with similar results indicating a non-homogeneous sample.
MM	The Matrix Spike exceeded control limits; LCS was in control validating the batch.
MI	Outside control limits due to matrix interference.
N	Manual integration performed on sample for quantification.
N/A	Not Applicable.
NC	Not calculable.
NO	Not Analyzed.
P	A post digestion spike was analyzed, and recoveries were within control limits.
Q	Detection limits elevated due to sample matrix.
Q1	Detection limits elevated due to high levels of non-target compounds. Sample(s) run at a dilution.
R	The duplicate RPD was greater than 20%. The sample was re-extracted and re-analyzed with similar results. This indicates a matrix interference in the sample, likely a non-homogeneity of the sample.
R1	The duplicate RPD was greater than 20%. Visual inspection showed the sample to be non-homogeneous.
RD	RPD not applicable for results less than five times the reporting limit.
RH	The Relative Percent Difference (RPD) between two columns was greater than 40%, the higher result was reported.
RL	The Relative Percent Difference (RPD) between two columns was greater than 40%, the lower result was reported due to obvious interference with the higher result.
RP	MS/MSD RPD is greater than 20%
SR	Surrogate recovery outside control limits. See the surrogate page of the report.
SD	Unable to quantitate surrogate due to sample dilution.
SC	Sample not provided to laboratory in proper sampling container.
V	Volatile analysis was requested, sample container received with headspace.
X1	The duplicate RPD was greater than 20%. Due to insufficient sample, re-analysis was not possible.
X	Sample was analyzed outside recommended holding times.
Y	The result for this parameter was greater than the TCLP regulatory limit.
Z	The pattern seen for the parameter being analyzed is not typical.

CHAIN OF CUSTODY

LABORATORY # 98-01323

Fax: 248-0223

☐ AEN Disposal @ \$5.00 each ☐ Return

LAB ID

S	TCLP
---	------

REQUIREMENTS

DATE	TIME	LOCATION	TYPE OF CONTAINERS
11/1/78	10:00	1000	1000

3.

Time

Date

1

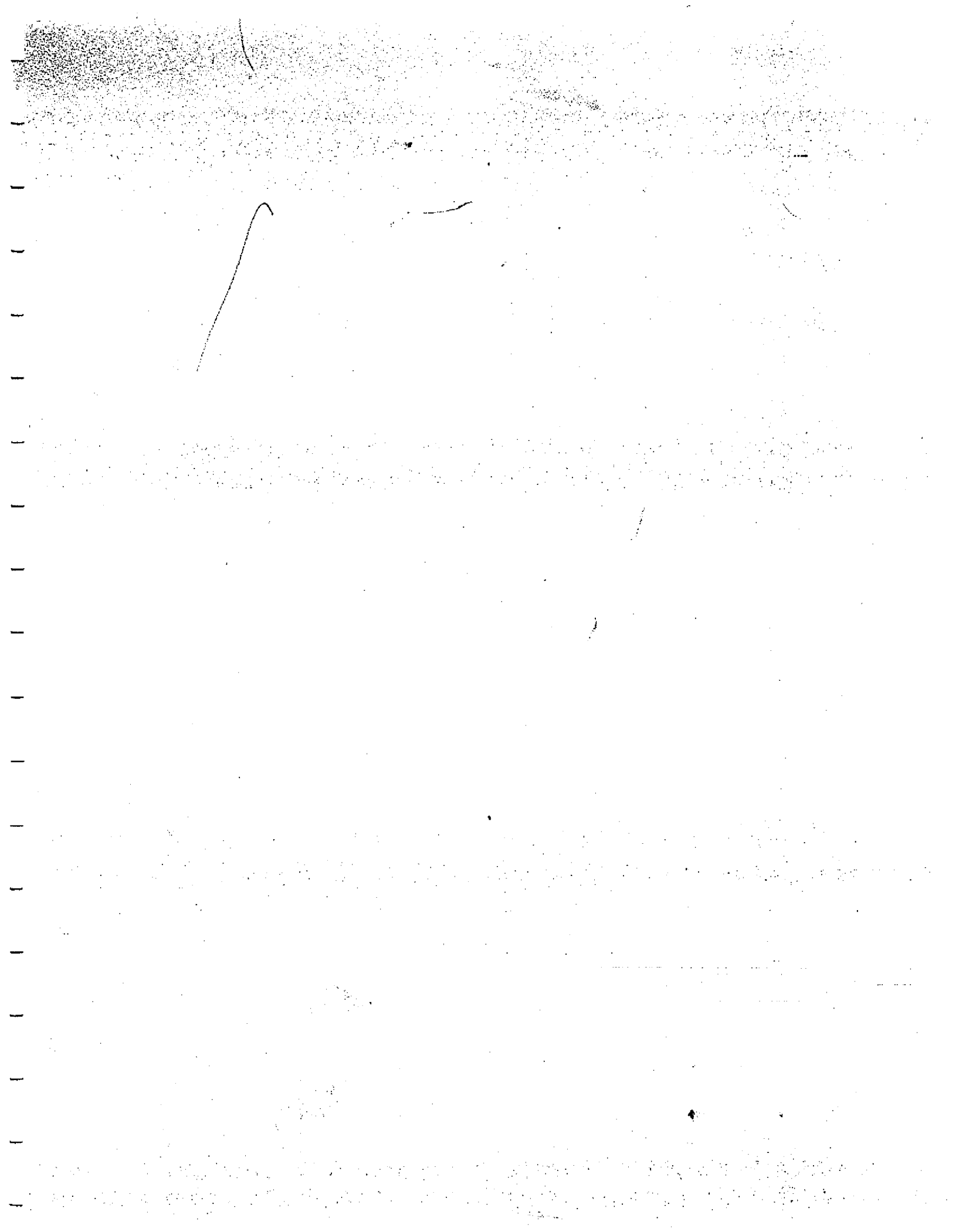
Time

1

Is this work being conducted for regulatory compliance monitoring? YES NO

Which regulation apply: RCRA _____ NPDES Wastewater _____ UST _____ Drinking Water _____ Other _____ None _____

Durham, Oregon 97224 • (503) 684-0447 FAX: (503) 620-0393



ASH GROVE CEMENT COMPANY

To: Gary Wright

Date: July 6, 1998

From: Glenn Dollar

**Subject: Monthly Environmental
Report**

.....

On June 23, 1998 I received favorable results from ground water samples which were taken from our tank farm area. The purpose of the tests was to identify potential leakage from the tanks into the shallow groundwater. The laboratory analysis indicate that no petroleum hydrocarbons, BTEX, or PAHs are present in the groundwater at concentrations above their detection limits. I was glad to say the least, to see the favorable results. I was also aware of possible contamination based on tests which the same company and registered geologist performed in 1993. These results also indicate the previous contamination has remediated itself through natural attenuation which is very good to see.

Results from the source test on the #4 Ag mill proved to be less favorable. We now are required to submit a modification of are current permit and are considering options. There is some question about whether we have acceptable data for an evaluation which will be made with assumptions and whether these assumptions will be acceptable to the DEQ. I will be working on this task throughout the month of July and hope to see its completion sometime soon.

According to my best estimate we are not required to report to the EPA for the Emergency Planning and Community Right-to-Know Act (EPCRA). This is also referred to as a toxic chemical release inventory. We do not trigger any of the reporting thresholds. We still need to keep abreast of any changes in this act as the reporting requirements will continue to get more stringent.

To: Gary Wright

From: Glenn Dollar
Safety/Environmental Manager

Subject: Environmental Report for April 1998

.....

Many hours have been spent, not only by myself but also by many people in the Ash Grove system, on the many questions that arose over the receiving of oil that was out of our acceptable limits. The month of April saw a culmination of this work with the contacting of the DEQ and EPA on this matter. Ed Druback, Air Quality Manager for the NW Region for DEQ was contacted first. This was done not as a requirement but as a courtesy call to inform our local enforcement agency that we would be contacting the EPA to inform them of this occurrence. Dan Duncan, PCB coordinator for the EPA Region X in Seattle was the contact person I used for the EPA. I later faxed Dan testing information from the oil samples we took from the deliveries that were over acceptable limits. I also contacted Kathy Amidon, our permit writer at DEQ, so she would not feel left out of what was going on. She was very thankful to be included and I feel we are developing good communication channels between her and Rivergate. This matter is probably far from over as I expect to receive additional inquiries from the EPA.

Ash Grove Rivergate also got involved with some Earth Day Activities this month. On April 22 myself and some members of the yard department did some cleanup work on the riverbank along the Willamette River. We picked up about 550 pounds of garbage and I must say it was more physical work than I have done for some time. We had to park the loader and carry and drag much of the material to where it was. It was also a very warm day so I had the unfortunate experience of sweating while at work. I took some pictures of the cleanup and hope to include them in this months Rivergate Rumor.

On Tuesday, April 28, we performed, in the nick of time I might add, a source test at our #4 Ag mill location for the burning of landfill gas. The pollutants which we tested for were CO, NOx, SO2, and VOC. The preliminary results from the testing looked very good, although this wasn't accomplished without some initial headaches associated with the pulsing of the #4 burner.



PORTLAND
SEATTLE
VANCOUVER
EUGENE
BEND
TRI-CITIES

September 27, 2006

Ash Grove Cement Company
C/o Mr. Glenn Dollar
13939 N. Rivergate Blvd.
Portland, Oregon 97203

Via Email Only: glenn.dollar@ashgrove.com

**PROPOSAL TO TEST GROUNDWATER MONITORING WELLS
13939 N. RIVERGATE BLVD., PORTLAND, OREGON**

Dear Mr. Dollar:

PBS is pleased to present this proposal to collect and test groundwater samples from the existing onsite wells. PBS installed three permanent wells at the property in 1992, for the purpose of monitoring for potential releases from large aboveground storage tanks (waste oil and fuel oil) in the vicinity. In 1992, groundwater at two of the wells contained diesel-fraction petroleum hydrocarbons and in one of the two wells, a low level of pyrene (PAH).

The wells were tested again in 1998 by PBS, and no BTEX, PAHs or petroleum hydrocarbons were detected in any of the wells. At this time, it is understood that the operations requiring the aboveground oil storage have been shut-down and the tanks are to be removed, and that Ash Grove wishes for the wells to be tested.

SCOPE OF SERVICES:

On-site Groundwater Monitoring Wells. It is assumed that the three existing wells are accessible and in good condition. If the well caps cannot be removed, it may be necessary to cut the lock; we have assumed the client will replace the lock.

The depth to the static water level will be measured in each of the three wells prior to sampling, using an electronic water level indicator. The relative elevations of the water table will be recorded on field forms. Groundwater samples will be collected from the wells using dedicated disposable bailers. Prior to sampling, three well volumes of water will be removed and parameters (temperature, conductivity, pH) measured after each well volume, to ensure fresh formation water.

4412 SW Corbett
Portland, OR 97201
503.248.1939 MAIN
503.248.0223 FAX
888.248.1939 TOLLFREE

ENGINEERING AND ENVIRONMENTAL

www.pbsenv.com

Samples will be labeled and stored in an ice chest for transport to the laboratory accompanied by chain-of-custody documentation. Upon completion of sampling, the well cap will be replaced, and the well cover re-sealed.

All investigation-derived waste (IDW) (purge water) will be sealed in a container and labeled, left onsite in an approved location pending receipt of laboratory analyses. Costs for disposal of IDW are not included here.

Laboratory Analysis. Three groundwater samples will be analyzed for BTEX (EPA Method 8020M); PAHs (EPA Method 8270SIM); and Total Petroleum Hydrocarbons (NWTPH-HCID).

This laboratory work will be performed under regular (7 to 10 business days) turnaround time. In the event contaminants of concern are detected by the laboratory, followup testing may be recommended, however costs for such followups are not included in our estimate, below, and this work will not be performed without prior authorization from the client.

Report. A letter report will be prepared which presents our findings, interpretation of the findings and opinion regarding the findings of the investigation. Included will be descriptions of field activities, a site plan showing well locations and groundwater potentiometric surface, results of analyses, copies of laboratory reports and chain-of-custody documentation.

SCHEDULE:

Field work can likely be scheduled within one week of authorization to proceed, and will be completed within one day. Laboratory results will be available within 7 to 10 business days after completion of sampling, and will be communicated to the client at that time. Our final report can be completed within one additional week.

COST ESTIMATE:

PBS Labor	\$1,600
Laboratory Analysis	
-BTEX: 3 @ \$70/ea.	
-TPH-HCID: 3 @ \$60/ea.	
-PAHs: 3 @ \$185/ea.	
Laboratory Total:	945
Reimbursable Expenses	400
TOTAL ESTIMATED FEE.....	\$ 2,945

The total fee for the above scope of work is not expected to exceed \$ 3,000. Additional analysis may be warranted in the event that contamination is detected. PBS will consult with the client prior to incurring any additional laboratory costs.

LIMITATION OF SCOPE:

This study will be limited to the tests, locations and depths as indicated to determine the absence or presence of certain contaminants. The site as a whole may have other contamination that will not be characterized by this study. Further study may be recommended. The findings and conclusions of this work are not scientific certainties but, rather, probabilities based on professional judgement concerning the significance of the data gathered during the course of this investigation. PBS is not able to represent that the site or adjoining land contain no hazardous waste, oil or other latent condition beyond that detected or observed by PBS.

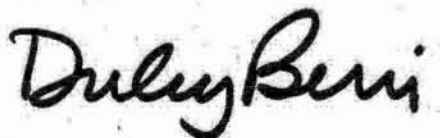
Unforeseen subsurface conditions such as impenetrable geologic formations or coarse fill material may prevent the completion of the proposed soil probe investigation. In this event, the work will stop and the client will be notified immediately.

The indicated fee and the terms under which our services are provided will be in accordance with the attached General Terms and Conditions for Professional Services ("Terms and Conditions") dated 07/2006 as modified for the client, which together with this proposal comprise the entire agreement between the parties. The Terms and Conditions may not be changed without the prior written consent of the parties.

Ash Grove Cement Company
Re: Groundwater Monitoring Well Testing, Portland, Oregon
September 27, 2006
Page 4

You may indicate acceptance of this agreement by returning a signed copy of this agreement or a purchase order incorporating the terms of the agreement, to my attention. Please feel free to contact me if you have any questions.

Sincerely,



Dulcy A. Berri, RG
Senior Hydrogeologist

ACCEPTED BY:

Name (please print)

Signature

Title

Date

Encl. General Terms and Conditions for Professional Services (07/2006)
P:\PROPOSAL\LETTER\Env - Groundwater\AshGroveGWMonitor.sept06.doc



GENERAL TERMS AND CONDITIONS FOR PROFESSIONAL SERVICES

Attached to and part of our letter agreement to client outlining our specific scope of services:

The purpose of these General Terms and Conditions is to identify basic contractual obligations of PBS and Client for various professional consulting services, whereby PBS would be acting in the role of Consultant/Owner Representative for Client. Individual projects may require additional detailed descriptions of services to be provided as a supplement to this agreement.

1. **RIGHT OF ENTRY:** Unless otherwise agreed, the Client will furnish PBS right-of-entry on real property and be responsible for the propriety of the time, place, and manner of our entry upon the real property where we are to perform our services. PBS will take reasonable precautions to minimize damage to the real property from use of equipment, but have not included in the fee the cost of restoration, unless specifically included in our scope of work. If the Client desires PBS to restore the real property to its approximate former condition, we will accomplish this and add the cost plus 15 percent to our fee.
2. **BURIED UTILITIES:** PBS field personnel are trained to initiate field testing, drilling and/or sampling within a reasonable distance of each designated utility location. PBS field personnel will avoid hazards or utilities that are observed by them at the site. If PBS is advised in writing of the presence or potential presence of underground or overground obstructions, such as utilities, we will give special instructions to our field personnel. PBS is not responsible for any damage or loss due to undisclosed or unknown surface or subsurface conditions owned by client or third parties. The client will hold PBS and PBS subcontractors harmless from any loss resulting from inaccuracy of markings, of plans, or lack of plans, relating to the location of utilities. Note: Utility locates typically requires 2 full working days advance notice.
3. **WORKER'S COMPENSATION INSURANCE:** PBS will provide Worker's Compensation insurance (and/or Employer's Liability insurance) as required by state statutes.
4. **LIABILITY INSURANCE:** PBS carries comprehensive General Liability insurance which, subject to its terms and limits, may provide protection against liability arising out of bodily injury or property damage arising out of PBS operations. PBS makes no representations or warranties concerning the effect, applicability or scope of such insurance. Upon request in writing by Client to PBS, PBS will request its insurer to name Client as an additional insured on such policies and to issue certificates to Client to that effect. PBS makes no representations or warranties regarding any act by its insurer(s), and shall not be responsible for performing any act with respect to such insurance not specifically called for by this paragraph.
5. **PROFESSIONAL LIABILITY AND LIMITATION THEREOF:** This paragraph relates only to Professional Liability and not General Liability. In performing our professional services, we will use that standard of care and skill ordinarily recognized under similar circumstances by members of our profession in the state and region at the time the services are performed. No other warranty, either expressed or implied, is made in connection with our rendering of professional services.
6. **CONTRACTED WORK:** PBS, including its subconsultants, are retained hereunder for the limited purpose of performing certain environmental surveys, providing the results of such surveys to client, and making recommendations with respect to the data produced by the surveys. PBS is not responsible for the overall environmental status of Client's project, for the interpretation of the survey results by others, for any use of its reports by Client or others except as specifically set forth herein, or for any other matter not encompassed in the specific assignment given to PBS by Client. Any unauthorized use or distribution of PBS's work shall be at the Client and recipient's sole risk. If Client desires to release, or for PBS to provide, our report(s) to a third party not described above for that party's reliance, PBS will agree to such a release provided we receive written acceptance from such third party to be bound by acceptable terms and conditions similar to this agreement, in addition to a fee for extending our liability to a new party. The Client shall indemnify, defend and hold harmless PBS and its subconsultants from any claims, damages, costs, losses and expenses, including but not limited to attorney fees and costs on arbitration, trial or appeal arising out of unauthorized or third party use of PBS' reports.
7. **SAMPLES:** All samples will be discarded 30 days after submission of our final report unless other arrangements are made.
8. **PAYMENTS TO CONSULTANT:** Invoices will be submitted periodically for prior services. An account will become delinquent 30 days after date of billing. It is agreed that a late charge will be added to delinquent accounts at the rate of one-and-one-half percent (1-1/2%) for each thirty days delinquent (provided the rate of such late charge shall not exceed the maximum allowable by the laws of the state in which our office submitting the invoice is located).
9. **RATE SCHEDULE:** Fees for services are based on the number of hours expended on the project, including travel, by PBS personnel plus any reimbursable expenses. Our hourly rates will be billed as stated in our proposal or at our current hourly rates (available upon request).





10. REIMBURSABLE EXPENSES:

- A. Outside Services. Subcontracted services such as subconsultants, labor, and technical services will be invoiced at cost plus 15 percent. Examples of services that may be subcontracted include other professional disciplines, soil boring, well installation, heavy and specialty equipment operators, geophysical surveys, and computer programming.
- B. Supplies. Charges for items not ordinarily furnished by PBS such as expendable equipment, rental equipment, subsistence, travel expenses, tolls, special fees, reproduction, permits, licenses, priority mail fees, and long-distance and wireless telephone calls will be invoiced at cost plus 10%.
- C. Equipment. Certain PBS-owned equipment (for sampling, testing, personal protective equipment, vehicle mileage, photocopying, etc.) may be required to complete the project. These will be invoiced at our standard rates without markup (rates available upon request).
- D. Laboratory. PBS utilizes both in-house and outside laboratories for sample analysis. We maintain a list of standard rates for sample analyses commonly utilized in conjunction with our services (available upon request).

11. OTHER PROVISIONS: Neither party shall hold the other responsible for delay in performance caused by acts of God, strikes, lockouts, weather, accidents, or other events beyond the control of the other or the other's employees and agents.

Waivers by either party of any provision, term, condition or covenant, shall not be construed by the other party as a waiver of a subsequent breach of the same by the other party by providing written notice. This agreement supersedes any contract language which may be issued by client as a matter of standard purchasing protocol without regard to the unique nature of professional services.

An opinion of construction, remediation and restoration costs prepared by PBS represents our judgment as a professional. Since we have no control over the cost of labor and material, or over competitive bidding or market conditions, we do not guarantee the accuracy of our opinion as compared to contractor bids of actual cost to the Client.

It is understood and agreed by both parties that PBS, in performing professional services for the Client with respect to hazardous or microbial substances, will make recommendations to the Client but does not have the authority or responsibility to decide where disposal or treatment takes place, nor to designate how or by whom the hazardous or microbial substances are to be transported for disposal or treatment. It is understood that PBS is not the generator or site operator and does not own the hazardous waste discovered, handled or removed from the owner's property. Client agrees under advice from client's counsel to timely disclosure to appropriate public agencies as required by law; any information that may be necessary to prevent damage to human health, safety, or the environment. Client agrees that PBS and its consultants are not responsible for the creation of the condition(s) PBS is being asked to investigate and that it would be unfair for PBS to be exposed to claims of injury or damage as a result of the conditions. In addition, Client understands that it is possible that exploration and investigation may fail to reveal the presence, location or source of the condition(s) being investigated even when the condition(s) is assumed or expected to exist. Client understands that PBS's failure to discover and/or locate the condition(s) or the spread of the condition(s) through appropriate and mutually agreed upon techniques does not guarantee that the condition(s) does or does not exist. Client agrees that it would be unfair to hold PBS liable for creating the condition(s) or the spread of the condition(s) providing PBS meets a reasonable standard of care and/or as described by supplemental proposal. Accordingly, Client waives any resulting claims against PBS and its consultants, and agrees to defend, indemnify and hold harmless PBS and its consultants from any and all claims or liability for injury or loss arising from the creation of the original condition(s) or the unintentional exacerbation of the original condition(s) by PBS, the exacerbation of hazardous conditions by others, the discovery of any condition, location of any condition and/or allowing any condition to exist. Client also agrees to fairly compensate PBS and its consultants for any time spent and expenses incurred in the defense of any such claim.

PBS does not provide legal opinions, and recommends client seek legal counsel for advice on issues such as the appropriateness of a particular scope of work to minimize legal liability, potential cost recovery from responsible parties, and to assess the value of maintaining attorney/client privilege for work conducted under this agreement.

In the event there is a dispute between PBS and the Client concerning the performance of any provision in this agreement, the losing party shall pay the prevailing party reasonable attorney's fees and costs on trial or appeal. In addition, Client agrees to pay PBS for all employee time, costs, and witness costs incurred for collection activity.

This agreement can be terminated at any time by either party. If terminated prior to the completion of a scope of work, PBS shall be entitled to its portion of fees for any work performed in accordance with the above rate schedule.





PORTLAND
SEATTLE
VANCOUVER
EUGENE
BEND
TRI-CITIES
BANDON

TRANSMITTAL

DATE: October 30, 2006

TO: Glenn Dollar
Ash Grove Cement
13939 N. Rivergate Blvd.
Portland, OR 97203

FROM: Heidi Yantz

PROJECT NO: 18484.000

RE: **Groundwater Monitoring Report**

Glenn,

Per our discussion this morning, here is the groundwater monitoring report. Please call if you have any questions. Thank you for your business.

4412 SW Corbett
Portland, OR 97239
503.248.1939 MAIN
503.248.0223 FAX
888.248.1939 TOLLFREE

ENGINEERING AND ENVIRONMENTAL

www.pbsenv.com



PORTLAND
SEATTLE
VANCOUVER
EUGENE
BEND
TRI-CITIES
BANDON

October 30, 2006

Mr. Glenn Dollar
Ash Grove Cement Company
13939 N. Rivergate Blvd.
Portland, Oregon 97203

Re: Groundwater Monitoring – October 2006
Oil Tank Farm
Ash Grove Cement Lime Plant
PBS Project #18484.000

Dear Mr. Dollar:

The following presents the results of the recent groundwater sampling conducted at the Ash Grove Cement Company Lime Plant at 13939 N. Rivergate Boulevard, Portland, Oregon. The purpose of the investigation was to monitor the groundwater quality in the tank farm area prior to potential abandonment required during tank farm decommissioning.

1.0 INTRODUCTION AND BACKGROUND

The tank farm consists of one 420,000-gallon waste oil tank, one 25,000-gallon off-spec waste oil tank, and one 4,000-gallon #2 fuel oil tank. All tanks are aboveground. The two larger tanks are oriented vertically and rest on flat concrete bases. The smaller tank is oriented horizontally and is mounted on concrete saddles. The 25,000-gallon tank had previously contained diesel fuel.

In December 1992, PBS installed three groundwater-monitoring wells in the tank farm area, each to a depth of 15 feet. Samples were collected from each well on January 8, 1993. Results were summarized in a letter dated February 26, 1993. Diesel range organics were detected in wells MW-1 and MW-2.

The wells were sampled again on April 22, 1993 to follow up on the TPH detections. Results were summarized in a letter dated June 11, 1993. Pyrene (a polynuclear aromatic hydrocarbon or PAH) was detected at low levels in MW-3.

On April 16, 1998, PBS monitored the three wells by collecting samples for analysis of Total Petroleum Hydrocarbons (TPH), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) and PAHs. Results were summarized in a letter dated June 18, 1998. There were no detections of any compound analyzed.

4412 SW Corbett
Portland, OR 97239
503.248.1939 MAIN
503.248.0223 FAX
888.248.1939 TOLLFREE

ENGINEERING AND ENVIRONMENTAL

www.pbsenv.com

2.0 MONITORING WELL SAMPLING AND ANALYSIS

PBS Hydrogeologist Heidi Yantz was on site on October 11, 2006 to conduct groundwater monitoring at the three wells. Prior to sampling, the well caps were removed from each well and the water levels were allowed to equilibrate. Depth to water and depth to well bottom were then measured using an electronic water level indicator.

During the initial purging of groundwater, it was observed that the groundwater was very cloudy with rust-colored fine to medium size particles in all three wells. In addition, wells MW-1 and MW-3 were slow to recharge with MW-2 recovering slightly faster. Therefore, each well was purged multiple times until nearly dry in order to reduce the number of rusty particles in the groundwater samples. Once the purged groundwater became less cloudy, each well had three casing volumes removed. After each casing volume, groundwater parameters (pH, temperature and conductivity) were measured and recorded. Field forms showing the activity at each well are provided in Appendix A.

All purged groundwater was placed in 5-gallon buckets provided by Mr. Dollar and left adjacent to the tank farm for future disposal.

Groundwater samples were obtained from each well using dedicated disposable polyethylene bailers. The samples were collected in laboratory-provided containers, placed in an ice chest, and transported by hand, under chain of custody documentation, to Integrity Brokers for analysis by Environmental Science Corp laboratory. The samples were analyzed for TPH (method NWTPH-HCID), BTEX (method 8021B) and PAHs (method 8270C).

3.0 GROUNDWATER ELEVATIONS/FLOW DIRECTION

Groundwater measurements are presented in Table 1. Groundwater levels in the three wells are significantly lower than those measured in previous monitoring events. This is likely a seasonal effect, particularly given the wells' proximity to the Willamette River, which is typically lower in fall than any other season.

Figure 1 shows the inferred direction of groundwater flow to be to the northwest. This is consistent with the flow direction measured during the previous sampling events. It should be noted that the groundwater elevation is relative to a local datum and is not intended for comparison with other wells or surface water bodies.

4.0 LABORATORY RESULTS

A summary of the current and historical detections in groundwater is presented in Table 2. The laboratory report for the October 2006 monitoring event is provided as Appendix B.

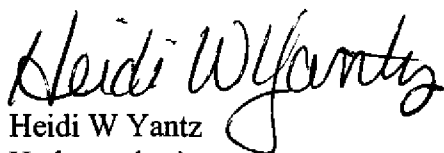
Low levels of diesel range organics (120 ug/L) were detected in MW-3; TPH was not detected in MW-1 or MW-2. A low level detection of 0.58 ug/L of Benzene was detected in MW-3. There were no other BTEX detections in any of the wells. Naphthalene was detected at 0.1 ug/L in MW-1; there were no other detections of PAHs in any of the wells.

5.0 CONCLUSIONS

The low levels of contamination detected in the wells do not exceed the applicable state standards for occupational land use. Therefore, once the tank farm has been decommissioned, the wells can be properly abandoned per Oregon Administrative Rule (OAR) 690-240-0510. Care should be taken during the tank decommissioning to protect the wells from damage.

Please do not hesitate to call should you have any questions

Sincerely,



Heidi W Yantz
Hydrogeologist

Attachments:

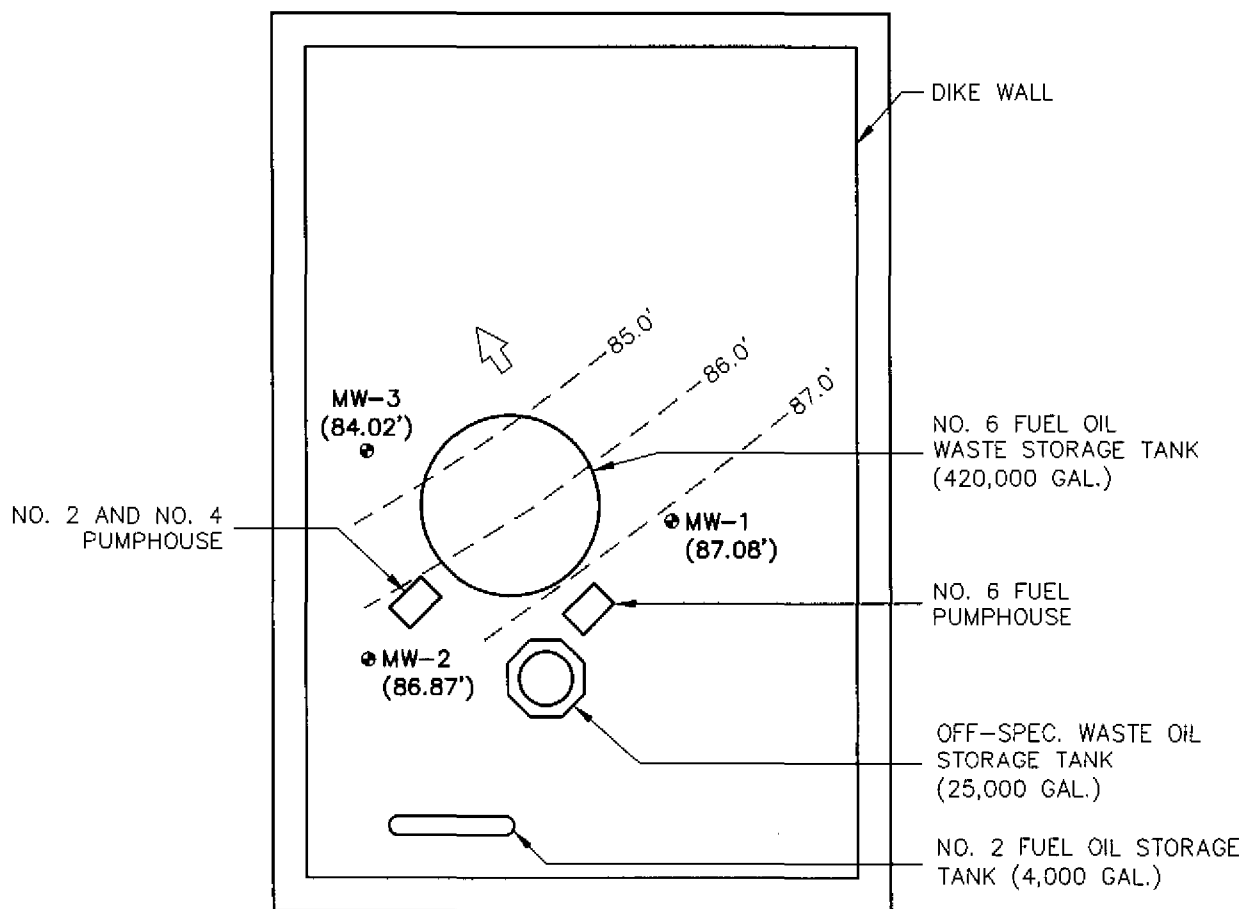
Figures

Tables

Appendix A: Field Data Sheets

Appendix B: Laboratory Analytical Report

FIGURE



LEGEND

- ⊕ MONITORING WELL LOCATIONS
- ➔ APPROXIMATE DIRECTION OF GROUNDWATER FLOW
- GROUNDWATER ELEVATION CONTOUR LINES (LOCAL DATUM)
- (93.02') WATER LEVEL ELEVATIONS (LOCAL DATUM TOP OF WELL CASING MW-1, ASSUMED 100')



NOT TO SCALE



Project #:
18484.000
Date:
OCT. 2006

GROUNDWATER ELEVATION (LOCAL DATUM) CONTOUR MAP
(10/11/06)
ASH GROVE CEMENT COMPANY

FIGURE
1

TABLES

Table 1: Groundwater Elevations
Ash Grove Cement, Portland, Oregon

Monitor Well ID	Screened Interval (ft)	Well Diameter (in)	Top of Casing Elevation (ft) ¹	Date	Depth to Water from Top of Casing (ft)	Groundwater Elevation (local datum ¹)
MW-1	10-15'	2	100	1/8/1993	9.98	90.02
				4/22/1993	8.68	91.32
				5/27/1998	6.76	93.24
				10/11/2006	12.92	87.08
MW-2	10-15'	2	99.2	1/8/1993	9.79	89.41
				4/22/1993	8.62	90.58
				5/27/1998	6.64	92.56
				10/11/2006	12.33	86.87
MW-3	10-15'	2	99.53	1/8/1993	10.64	88.89
				4/22/1993	6.49	93.04
				5/27/1998	6.99	92.54
				10/11/2006	15.51	84.02

Wells installed to total depth of 15 feet below ground surface

¹ Local datum from top of casing of MW-1, which was set at 100'

Table 2: Groundwater Analytical Results
Ash Grove Cement, Portland, Oregon

Well ID	Sample Date	Total Petroleum Hydrocarbons	Volatile Organic Compounds				Polynuclear Aromatic Hydrocarbons	
			Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	Pyrene
MW-1	1/8/1993	Diesel: 690	na	na	na	na	na	na
	4/22/1993	na	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1
	5/27/1998	nd	<0.5	<0.5	<0.5	<1.0	nd	nd
	10/11/2006	nd	<0.5	<5	<0.5	<1.5	0.1	<0.1
MW-2	1/8/1993	Diesel: 790	na	na	na	na	na	na
	4/22/1993	na	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1
	5/27/1998	nd	<0.5	<0.5	<0.5	<1.0	nd	nd
	10/11/2006	nd	<0.5	<5	<0.5	<1.5	<0.1	<0.1
MW-3	1/8/1993	nd	na	na	na	na	na	na
	4/22/1993	na	<0.5	<0.5	<0.5	<0.5	<0.1	0.12
	5/27/1998	nd	<0.5	<0.5	<0.5	<1.0	nd	nd
	10/11/2006	Diesel: 120	0.58	<5	<0.5	<1.5	<0.1	<0.1
OR Risk-Based Groundwater Cleanup Levels (occupational)	Ingestion/Inhalation of Tapwater	Diesel: 350	2.2	2,900	5,400	820	25	4400
	Volatilization to Outdoor Air	**	13,000	13,000,000	36,000,000	3,700,000	540000	nv
	Vapor Intrusion into Buildings	**	2,700	2,500,000	6,400,000	710,000	350000	nv
	Groundwater in Excavation	**	1,700	78,000	110,000	22,000	680	5800

Concentrations in ug/L

NA: Analysis not conducted during this monitoring event

ND: Not detected above the detection limit

nv: Compound non-volatile, no standard set

** Level varies depending on number of carbons

APPENDIX A

Groundwater Monitoring Field Data Sheets



Groundwater Sampling Field Data Sheet

Date 10/11/06PBS Project # 18484.000Well # MW-1Climatic Conditions Sunny, highs in low 70's

temporary ID well #2 (East)

	(a)	(b)	(a-b)	(a-b)x(0.163)	X(3.784)
Arrival Time	Depth to Bottom (ft)	Depth to Water (ft)	Depth Difference	Casing Volume (gal.)	Casing Volume (liters)
1150	16.35 *	12.92	3.43	0.56	—

Signif. figures: (0.01) (0.01) (0.01) (0.1) (1)

Method disposable bailerPump Depth n/a

Casing Volume	Time	Conductivity (mS/cm)	pH	Temp (°C)	Turbidity	
+ 0.75	1000	not taken, water is full of rusty particulate. Will wait to recover				
	Have purged 2.5 gal - barely lightening up					
1	0.5	1155	480	6.94	17.7	not tested
2	1.0	1200	469	6.94	16.7	
3	2.0	1204	472	6.91	16.5	
total purged 4.5 gal						

Purge Water Disposal contained on sitePump Start Time n/aPump Stop Time n/aSample Time 1215Sample Method disposable bailerField Filtered? Y ☐ N ☒Sample #/ID MW-1Sampler's Printed Name Heidi YantzSampler's Signature Heidi YantzNotes final water is still red, slightly cloudy



Groundwater Sampling Field Data Sheet

Date 10/11/06PBS Project # 18484.000Well # MW-2Climatic Conditions Sunny, highs in low 70's

temporary ID well #3 (SW)

	(a)	(b)	(a-b)	(a-b)x(0.163)	X(3.784)
Arrival Time	Depth to Bottom (ft)	Depth to Water (ft)	Depth Difference	Casing Volume (gal.)	Casing Volume (liters)
1040	16.88	12.33	4.55	0.74	—

Signif. figures: (0.01) (0.01) (0.01) (0.1) (1)

Method disposable bailerPump Depth n/a

Casing Volume	Time	Conductivity (mS/cm)	pH	Temp (°C)	Turbidity
2 gal	initial purge to get rid of particulate (not quite as rusty as other two wells)				
1 0.75	1044	626	7.04	16.2	not tested
2 1.5	1048	470	6.97	17.2	
3 2.25	1051	479	6.99	18.0	
total purged ~4.5					

Purge Water Disposal contained on sitePump Start Time n/aPump Stop Time n/aSample Time 1055Sample Method disposable bailerField Filtered? Y N XSample #/ID MW-2Sampler's Printed Name Heidi GantzSampler's Signature Heidi GantzNotes final water dark brick-red, cloudy but no not visible particles



Groundwater Sampling Field Data Sheet

Date 10/11/06PBS Project # 18484.000Well # MW-3Climatic Conditions Sunny, highs in low 70's

temporary 10 well #1 (nw)

	(a)	(b)	(a-b)	(a-b)x(0.163)	X(3.784)
Arrival Time	Depth to Bottom (ft)	Depth to Water (ft)	Depth Difference	Casing Volume (gal.)	Casing Volume (liters)
0940	17.81 *	15.51	2.30	0.38	✓

Signif. figures:

(0.01)

(0.01)

(0.01)

(0.1)

(1)

Method disposable bailerPump Depth n/a

Casing Volume gal	Time	Conductivity (mS/cm)	pH	Temp (°C)	Turbidity
1 0.5	0946	not taken, water is full of rusty particulate. letting well recover			
2 1	have purged	2 gal, is lightening up	16.2		
3 1.5	1126	629	7.04	17.8	not tested
1 0.5	↑	↑	↑	↑	
2 1	1132	671	7.04	15.9	need to wait for recovery
3 1.25	1148	590	7.02	17.2	
total purged 3.25 gal		need to let recover before sampling			

Purge Water Disposal contained on sitePump Start Time n/aPump Stop Time n/aSample Time 1240Sample Method disposable bailerField Filtered? Y N XSample #/ID MW-3Sampler's Printed Name Heidi YantzSampler's Signature Heidi YantzNotes water remained brick-red with visible particulates. sample water was less cloudy

APPENDIX B

Laboratory Analytical Report

Phone: 417-7692

Fax: 249-0707

ANALYSIS REQUEST

PROJECT INFORMATION		SAMPLE RECEIPT		RELINQUISHED BY:		RELINQUISHED BY:		RELINQUISHED BY:	
PROJECT #:	TOTAL # OF CONTAINERS	COC SEALS INTACT?	Y / N / NA	SIGNATURE:	Date	SIGNATURE:	Date	SIGNATURE:	Date
PROJECT #: 19494.000	TOTAL # OF CONTAINERS 516	COC SEALS INTACT?	Y / N / NA	<i>Heidi Yantz</i>	10/11/11				
PURCHASE ORDER #:	RECEIVED INTACT?	Y / N		Printed Name:	Time	Printed Name:	Time	Printed Name:	Time
PURCHASE ORDER #:	RECEIVED INTACT?	Y / N		Heidi Yantz	14:20				
ONGOING PROJECT? Y (N)	RECEIVED TEMP			Company:		Company:		Company:	
PRIOR AUTHORIZATION REQUIRED FOR RUSH PROJECTS				RECEIVED BY:		RECEIVED BY:		RECEIVED BY:	
Normal Turn Around Time (TAT) = 5-10 Business Days				SIGNATURE:		SIGNATURE:		SIGNATURE:	
RUSH TAT Requested (circle) 24 HR 48 HR 72 HR 4 DAY 5 DAY				Date		Date		Date	
SPECIAL INSTRUCTIONS:				Printed Name:		Printed Name:		Printed Name:	
Call Duley or Heidi on HCID detects				M. Zirk					
				Time		Time		Time	
				2:30					
				Company:		Company:		Company:	
Sampled By:				Received via:					



PORTLAND
SEATTLE
VANCOUVER
EUGENE
BEND
TRI-CITIES
BANDON

December 4, 2006

Mr. Glenn Dollar
Ash Grove Cement Company
13939 N. Rivergate Blvd.
Portland, Oregon 97203

Re: Groundwater Monitoring – October 2006
Oil Tank Farm
Ash Grove Cement Lime Plant
PBS Project #18484.000

Dear Mr. Dollar:

The following presents the results of the October 2006 groundwater sampling conducted at the Ash Grove Cement Company Lime Plant at 13939 N. Rivergate Boulevard, Portland, Oregon. The purpose of the investigation was to monitor the groundwater quality in the tank farm area prior to potential abandonment required during tank farm decommissioning.

1.0 INTRODUCTION AND BACKGROUND

The tank farm consists of one 420,000-gallon waste oil tank, one 25,000-gallon off-spec waste oil tank, and one 4,000-gallon #2 fuel oil tank. All tanks are aboveground. The two larger tanks are oriented vertically and rest on flat concrete bases. The smaller tank is oriented horizontally and is mounted on concrete saddles. The 25,000-gallon tank had previously contained diesel fuel.

2.0 MONITORING WELL SAMPLING AND ANALYSIS

PBS Hydrogeologist Heidi Yantz was on site on October 11, 2006 to conduct groundwater monitoring at the three wells. Prior to sampling, the well caps were removed from each well and the water levels were allowed to equilibrate. Depth to water and depth to well bottom were then measured using an electronic water level indicator.

During the initial purging of groundwater, it was observed that the groundwater was very cloudy with rust-colored fine to medium size particles in all three wells. In addition, wells MW-1 and MW-3 were slow to recharge with MW-2 recovering slightly faster. Therefore, each well was purged multiple times until nearly dry in order to reduce the number of rusty particles in the groundwater samples. Once the purged groundwater became less cloudy, each well had three casing volumes removed. After each casing

4412 SW Corbett
Portland, OR 97239
503.248.1939 MAIN
503.248.0223 FAX
888.248.1939 TOLLFREE

ENGINEERING AND ENVIRONMENTAL

www.pbsenv.com

volume, groundwater parameters (pH, temperature and conductivity) were measured and recorded. Field forms showing the activity at each well are provided in Appendix A.

All purged groundwater was placed in 5-gallon buckets provided by Mr. Dollar and left adjacent to the tank farm for future disposal.

Groundwater samples were obtained from each well using dedicated disposable polyethylene bailers. The samples were collected in laboratory-provided containers, placed in an ice chest, and transported by hand, under chain of custody documentation, to Integrity Brokers for analysis by Environmental Science Corp laboratory. The samples were analyzed for total petroleum hydrocarbons (TPH) (method NWTPH-HCID), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) (method 8021B) and polynuclear aromatic hydrocarbons (PAHs) (method 8270C).

3.0 GROUNDWATER ELEVATIONS/FLOW DIRECTION

Groundwater measurements are presented in Table 1. Groundwater levels in the three wells are significantly lower than those measured in previous monitoring events. This is likely a seasonal effect, particularly given the wells' proximity to the Willamette River, which is typically lower in fall than any other season.

Figure 1 shows the inferred direction of groundwater flow to be to the northwest. This is consistent with the flow direction measured during the previous sampling events. It should be noted that the groundwater elevation is relative to a local datum and is not intended for comparison with other wells or surface water bodies.

4.0 LABORATORY RESULTS

The laboratory report for the October 2006 monitoring event is provided as Appendix B. A summary of the detections in groundwater is presented in Table 2.

Low levels of diesel range organics (120 ug/L) were detected in MW-3; TPH was not detected in MW-1 or MW-2. A low level detection of 0.58 ug/L of Benzene was detected in MW-3. There were no other BTEX detections in any of the wells. Naphthalene was detected at 0.1 ug/L in MW-1; there were no other detections of PAHs in any of the wells.

5.0 CONCLUSIONS

The low levels of contamination detected in the wells do not exceed the applicable state standards for occupational land use. Therefore, once the tank farm has been decommissioned, the wells can be properly abandoned per Oregon Administrative Rule

Mr. Glenn Dollar
Ash Grove Cement
Re: Groundwater Monitoring
December 4, 2006
Page 3 of 3

(OAR) 690-240-0510. Care should be taken during the tank decommissioning to protect the wells from damage.

Please do not hesitate to call should you have any questions

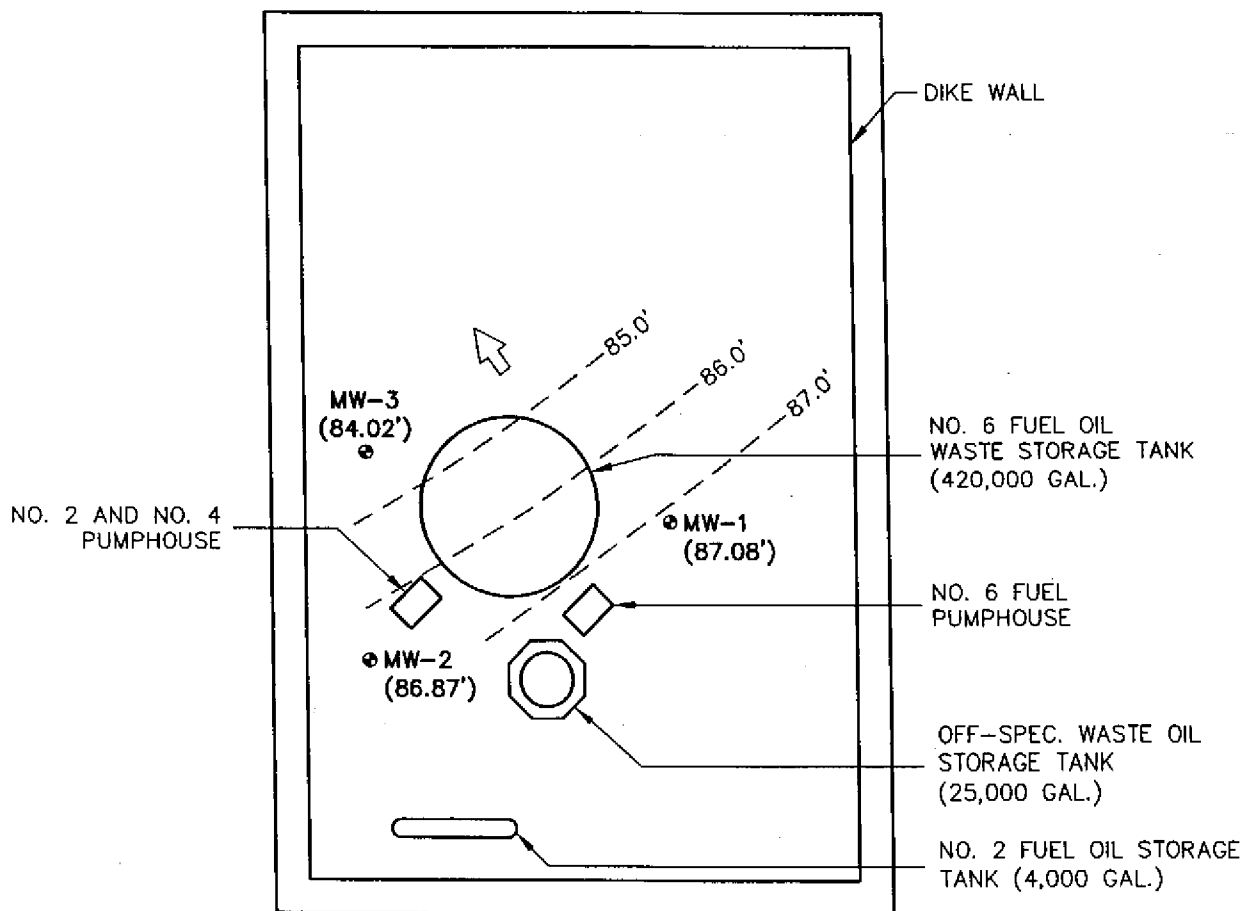
Sincerely,


Heidi W Yantz
Hydrogeologist

Attachments:

Figures
Tables
Appendix A: Field Data Sheets
Appendix B: Laboratory Analytical Report

FIGURE



LEGEND

- ⊕ MONITORING WELL LOCATIONS
- ↑ APPROXIMATE DIRECTION OF GROUNDWATER FLOW
- GROUNDWATER ELEVATION CONTOUR LINES (LOCAL DATUM)
- (93.02') WATER LEVEL ELEVATIONS (LOCAL DATUM TOP OF WELL CASING MW-1, ASSUMED 100')



NOT TO SCALE



Project #:
18484.000
Date:
OCT. 2006

GROUNDWATER ELEVATION (LOCAL DATUM) CONTOUR MAP
(10/11/06)
ASH GROVE CEMENT COMPANY

FIGURE
1

TABLES

Table 1: Groundwater Elevations
Ash Grove Cement, Portland, Oregon

Monitor Well ID	Screened Interval (ft)	Well Diameter (in)	Top of Casing Elevation (ft) ¹	Date	Depth to Water from Top of Casing (ft)	Groundwater Elevation (local datum ¹)
MW-1	10-15'	2	100	10/11/2006	12.92	87.08
MW-2	10-15'	2	99.2	10/11/2006	12.33	86.87
MW-3	10-15'	2	99.53	10/11/2006	15.51	84.02

Wells installed to total depth of 15 feet below ground surface

¹ Local datum from top of casing of MW-1, which was set at 100'

Table 2: Groundwater Analytical Results
Ash Grove Cement, Portland, Oregon

Well ID	Sample Date	Total Petroleum Hydrocarbons	Volatile Organic Compounds				Polynuclear Aromatic Hydrocarbons	
			Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	Pyrene
MW-1	10/11/2006	nd	<0.5	<5	<0.5	<1.5	0.1	<0.1
MW-2	10/11/2006	nd	<0.5	<5	<0.5	<1.5	<0.1	<0.1
MW-3	10/11/2006	Diesel: 120	0.58	<5	<0.5	<1.5	<0.1	<0.1
OR Risk-Based Groundwater Cleanup Levels (occupational)	Ingestion/Inhalation of Tapwater	Diesel: 350	2.2	2,900	5,400	820	25	4400
	Volatilization to Outdoor Air	**	13,000	13,000,000	36,000,000	3,700,000	540000	nv
	Vapor Intrusion into Buildings	**	2,700	2,500,000	6,400,000	710,000	350000	nv
	Groundwater in Excavation	**	1,700	78,000	110,000	22,000	680	5800

Concentrations in ug/L

ND: Not detected above the detection limit

nv: Compound non-volatile, no standard set

** Level varies depending on number of carbons

APPENDIX A

Groundwater Monitoring Field Data Sheets



Groundwater Sampling Field Data Sheet

Date 10/11/06PBS Project # 18484.000Well # MW-1Climatic Conditions Sunny, highs in low 70's

temporary 10 well #2 (East)

	(a)	(b)	(a-b)	(a-b)x(0.163)	X(3.784)
Arrival Time	Depth to Bottom (ft)	Depth to Water (ft)	Depth Difference	Casing Volume (gal.)	Casing Volume (liters)
1150	16.35 *	12.92	3.43	0.56	—
Signif. figures:	(0.01)	(0.01)	(0.01)	(0.1)	(1)

Method disposable bailerPump Depth n/a

Casing Volume	Time	Conductivity (mS/cm)	pH	Temp (°C)	Turbidity	
+ 0.75	1000	not taken, water is full of rusty particulate.			will wait to recover	
	Have purged 2.5 gal - barely lightening up					
1	0.5	1155	480	6.94	17.7	not tested
2	1.0	1200	469	6.94	16.7	
3	2.0	1204	472	6.91	16.5	
total purged 4.5 gal						

Purge Water Disposal combined on sitePump Start Time n/aPump Stop Time n/aSample Time 1215Sample Method disposable bailerField Filtered? Y N XSample #/ID MW-1Sampler's Printed Name Heidi YantzSampler's Signature Heidi YantzNotes final water is still red, slightly cloudy



PBS
ENVIRONMENTAL

low 70's

Appendix66-000083

Groundwater Sampling Field Data Sheet

Date 10/11/06PBS Project # 18484.000Well # MW-3Climatic Conditions Sunny, highs in
low 70's

temporary id well #1 (nw)

	(a)	(b)	(a-b)	(a-b)x(0.163)	X(3.784)
Arrival Time	Depth to Bottom (ft)	Depth to Water (ft)	Depth Difference	Casing Volume (gal.)	Casing Volume (liters)
0940	17.31 [*]	15.51	2.30	0.38	✓

Signif. figures: (0.01) (0.01) (0.01) (0.1) (1)

Method disposable bailerPump Depth n/a

Casing Volume gal	Time	Conductivity (mS/cm)	pH	Temp (°C)	Turbidity
1 0.5	0946	not taken, water is full of rusty particulate. letting well recover			
2 1	have purged	2 gal, is lightening up	16.2		
3 1.5	1126	629	7.04	17.8	not tested
1 0.5	↑	↑	↑	↑	
2 1	1132	671	7.04	15.9	need to wait for recovery
3 1.25	1148	590	7.02	17.2	
total purged 3.25 gal		need to let recover before sample			

Purge Water Disposal contained on sitePump Start Time n/aPump Stop Time n/aSample Time 1240Sample Method disposable bailerField Filtered? Y ☐ N ☒Sample #/ID MW-3Sampler's Printed Name Heidi YantzSampler's Signature Heidi YantzNotes water remained brick-red with visible particulates.
sample water was less cloudy

APPENDIX B

Laboratory Analytical Report



ENVIRONMENTAL
SCIENCE CORP.

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Darwin Thomas
Integrity Brokers
16869 SW 65th Avenue #344

Lake Oswego, OR 97035

Report Summary

Friday October 20, 2006

Report Number: L265136

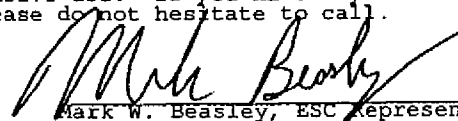
Samples Received: 10/13/06

Client Project: 18484.000

Description: Ashgrove Cement

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Reviewed By:


Mark W. Beasley, ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 09227, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375, DW21704, ND - R-140
NJ - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910

This report may not be reproduced, except in full, without written approval from Environmental Science Corp.



ENVIRONMENTAL SCIENCE CORP.

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Darwin Thomas
Integrity Brokers
16869 SW 65th Avenue #344
Lake Oswego, OR 97035

October 20, 2006

Date Received : October 13, 2006
Description : Ashgrove Cement
Sample ID : MW-1
Collected By :
Collection Date : 10/11/06 12:15

ESC Sample # : L265136-01

Site ID :

Project # : 18484.000

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	0.00050	mg/l	8021B	10/14/06	1
Toluene	BDL	0.0050	mg/l	8021B	10/14/06	1
Ethylbenzene	BDL	0.00050	mg/l	8021B	10/14/06	1
Total Xylene	BDL	0.0015	mg/l	8021B	10/14/06	1
Surrogate Recovery (77-118) a,a,a-Trifluorotoluene (PID)	100.		% Rec.	8021B	10/14/06	1
Gasoline Range (C7-C10)	BDL	0.10	mg/l	NWTPH-HCID	10/17/06	1
Mineral Spirits	BDL	0.10	mg/l	NWTPH-HCID	10/17/06	1
Kerosene (C9-C16)	BDL	0.10	mg/l	NWTPH-HCID	10/17/06	1
Diesel (C7-C26)	BDL	0.10	mg/l	NWTPH-HCID	10/17/06	1
#6 Fuel Oil (C10-C32)	BDL	0.10	mg/l	NWTPH-HCID	10/17/06	1
Hydraulic Fluid (C12-C33)	BDL	0.10	mg/l	NWTPH-HCID	10/17/06	1
Motor Oil (C16-C40)	BDL	0.25	mg/l	NWTPH-HCID	10/17/06	1
Surrogate Recovery (50-150) 1-Methylnaphthalene	103.		% Rec.	NWTPH-HCID	10/17/06	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.00010	mg/l	8270C	10/19/06	1
Acenaphthene	BDL	0.0010	mg/l	8270C	10/19/06	1
Acenaphthylene	BDL	0.0010	mg/l	8270C	10/19/06	1
Benzo(a)anthracene	BDL	0.0010	mg/l	8270C	10/19/06	1
Benzo(a)pyrene	BDL	0.0010	mg/l	8270C	10/19/06	1
Benzo(b)fluoranthene	BDL	0.0010	mg/l	8270C	10/19/06	1
Benzo(g,h,i)perylene	BDL	0.00010	mg/l	8270C	10/19/06	1
Benzo(k)fluoranthene	BDL	0.00010	mg/l	8270C	10/19/06	1
Chrysene	BDL	0.00010	mg/l	8270C	10/19/06	1
Dibenz(a,h)anthracene	BDL	0.00010	mg/l	8270C	10/19/06	1
Fluoranthene	BDL	0.00010	mg/l	8270C	10/19/06	1
Fluorene	BDL	0.00010	mg/l	8270C	10/19/06	1
Indeno(1,2,3-cd)pyrene	BDL	0.00010	mg/l	8270C	10/19/06	1
Naphthalene	0.00010	0.00010	mg/l	8270C	10/19/06	1
Phenanthrene	BDL	0.00010	mg/l	8270C	10/19/06	1
Pyrene	BDL	0.00010	mg/l	8270C	10/19/06	1
1-Methylnaphthalene	BDL	0.00010	mg/l	8270C	10/19/06	1
2-Methylnaphthalene	BDL	0.00010	mg/l	8270C	10/19/06	1
Surrogate Recovery						
Nitrobenzene-d5	71.4		% Rec.	8270C	10/19/06	1
2-Fluorobiphenyl	83.8		% Rec.	8270C	10/19/06	1
p-Terphenyl-d14	71.2		% Rec.	8270C	10/19/06	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 10/20/06 11:33 Printed: 10/20/06 15:19



ENVIRONMENTAL SCIENCE CORP.

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Darwin Thomas
Integrity Brokers
16869 SW 65th Avenue #344
Lake Oswego, OR 97035

October 20, 2006

Date Received : October 13, 2006
Description : Ashgrove Cement
Sample ID : MW-2
Collected By :
Collection Date : 10/11/06 10:55

ESC Sample # : L265136-02

Site ID :

Project # : 18484.000

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	0.00050	mg/l	8021B	10/14/06	1
Toluene	BDL	0.0050	mg/l	8021B	10/14/06	1
Ethylbenzene	BDL	0.00050	mg/l	8021B	10/14/06	1
Total Xylene	BDL	0.0015	mg/l	8021B	10/14/06	1
Surrogate Recovery (77-118) a,a,a-Trifluorotoluene (PID)	101.		% Rec.	8021B	10/14/06	1
Gasoline Range (C7-C10)	BDL	0.10	mg/l	NWTPH-HCID	10/17/06	1
Mineral Spirits	BDL	0.10	mg/l	NWTPH-HCID	10/17/06	1
Kerosene (C9-C16)	BDL	0.10	mg/l	NWTPH-HCID	10/17/06	1
Diesel (C7-C26)	BDL	0.10	mg/l	NWTPH-HCID	10/17/06	1
#6 Fuel Oil (C10-C32)	BDL	0.10	mg/l	NWTPH-HCID	10/17/06	1
Hydraulic Fluid (C12-C33)	BDL	0.10	mg/l	NWTPH-HCID	10/17/06	1
Motor Oil (C16-C40)	BDL	0.25	mg/l	NWTPH-HCID	10/17/06	1
Surrogate Recovery (50-150) 1-Methylnaphthalene	109.		% Rec.	NWTPH-HCID	10/17/06	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.00010	mg/l	8270C	10/19/06	1
Acenaphthene	BDL	0.0010	mg/l	8270C	10/19/06	1
Acenaphthylene	BDL	0.0010	mg/l	8270C	10/19/06	1
Benzo(a)anthracene	BDL	0.0010	mg/l	8270C	10/19/06	1
Benzo(a)pyrene	BDL	0.0010	mg/l	8270C	10/19/06	1
Benzo(b)fluoranthene	BDL	0.0010	mg/l	8270C	10/19/06	1
Benzo(g,h,i)perylene	BDL	0.00010	mg/l	8270C	10/19/06	1
Benzo(k)fluoranthene	BDL	0.00010	mg/l	8270C	10/19/06	1
Chrysene	BDL	0.00010	mg/l	8270C	10/19/06	1
Dibenz(a,h)anthracene	BDL	0.00010	mg/l	8270C	10/19/06	1
Fluoranthene	BDL	0.00010	mg/l	8270C	10/19/06	1
Fluorene	BDL	0.00010	mg/l	8270C	10/19/06	1
Indeno(1,2,3-cd)pyrene	BDL	0.00010	mg/l	8270C	10/19/06	1
Naphthalene	BDL	0.00010	mg/l	8270C	10/19/06	1
Phenanthrene	BDL	0.00010	mg/l	8270C	10/19/06	1
Pyrene	BDL	0.00010	mg/l	8270C	10/19/06	1
1-Methylnaphthalene	BDL	0.00010	mg/l	8270C	10/19/06	1
2-Methylnaphthalene	BDL	0.00010	mg/l	8270C	10/19/06	1
Surrogate Recovery						
Nitrobenzene-d5	68.4		% Rec.	8270C	10/19/06	1
2-Fluorobiphenyl	85.4		% Rec.	8270C	10/19/06	1
p-Terphenyl-d14	68.1		% Rec.	8270C	10/19/06	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit (PQL)

Note:

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 10/20/06 11:33 Printed: 10/20/06 15:19



ENVIRONMENTAL SCIENCE CORP.

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Darwin Thomas
Integrity Brokers
16869 SW 65th Avenue #344
Lake Oswego, OR 97035

October 20, 2006

Date Received : October 13, 2006
Description : Ashgrove Cement
Sample ID : MW-3
Collected By :
Collection Date : 10/11/06 12:40

ESC Sample # : L265136-03

Site ID :

Project # : 18484.000

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	0.00058	0.00050	mg/l	8021B	10/14/06	1
Toluene	BDL	0.0050	mg/l	8021B	10/14/06	1
Ethylbenzene	BDL	0.00050	mg/l	8021B	10/14/06	1
Total Xylene	BDL	0.0015	mg/l	8021B	10/14/06	1
Surrogate Recovery (77-118) a,a,a-Trifluorotoluene (PID)	101.		% Rec.	8021B	10/14/06	1
Diesel Range Organics (DRO)	0.12	0.10	mg/l	NWTPHDX	10/17/06	1
Residual Range Organics (RRO)	BDL	0.25	mg/l	NWTPHDX	10/17/06	1
Surrogate Recovery 1-Methylnaphthalene	103.		% Rec.	NWTPHDX	10/17/06	1
Gasoline Range (C7-C10)	BDL	0.10	mg/l	NWTPH-HCID	10/17/06	1
Mineral Spirits	BDL	0.10	mg/l	NWTPH-HCID	10/17/06	1
Kerosene (C9-C16)	BDL	0.10	mg/l	NWTPH-HCID	10/17/06	1
Diesel (C7-C26)	0.12	0.10	mg/l	NWTPH-HCID	10/17/06	1
#6 Fuel Oil (C10-C32)	BDL	0.10	mg/l	NWTPH-HCID	10/17/06	1
Hydraulic Fluid (C12-C33)	BDL	0.10	mg/l	NWTPH-HCID	10/17/06	1
Motor Oil (C16-C40)	BDL	0.25	mg/l	NWTPH-HCID	10/17/06	1
Surrogate Recovery(50-150) 1-Methylnaphthalene	103.		% Rec.	NWTPH-HCID	10/17/06	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.00010	mg/l	8270C	10/19/06	1
Acenaphthene	BDL	0.0010	mg/l	8270C	10/19/06	1
Acenaphthylene	BDL	0.0010	mg/l	8270C	10/19/06	1
Benzo(a)anthracene	BDL	0.0010	mg/l	8270C	10/19/06	1
Benzo(a)pyrene	BDL	0.0010	mg/l	8270C	10/19/06	1
Benzo(b)fluoranthene	BDL	0.0010	mg/l	8270C	10/19/06	1
Benzo(g,h,i)perylene	BDL	0.00010	mg/l	8270C	10/19/06	1
Benzo(k)fluoranthene	BDL	0.00010	mg/l	8270C	10/19/06	1
Chrysene	BDL	0.00010	mg/l	8270C	10/19/06	1
Dibenz(a,h)anthracene	BDL	0.00010	mg/l	8270C	10/19/06	1
Fluoranthene	BDL	0.00010	mg/l	8270C	10/19/06	1
Fluorene	BDL	0.00010	mg/l	8270C	10/19/06	1
Indeno(1,2,3-cd)pyrene	BDL	0.00010	mg/l	8270C	10/19/06	1
Naphthalene	BDL	0.00010	mg/l	8270C	10/19/06	1
Phenanthrene	BDL	0.00010	mg/l	8270C	10/19/06	1
Pyrene	BDL	0.00010	mg/l	8270C	10/19/06	1
1-Methylnaphthalene	BDL	0.00010	mg/l	8270C	10/19/06	1
2-Methylnaphthalene	BDL	0.00010	mg/l	8270C	10/19/06	1
Surrogate Recovery						
Nitrobenzene-d5	68.0		% Rec.	8270C	10/19/06	1
2-Fluorobiphenyl	84.8		% Rec.	8270C	10/19/06	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)



ENVIRONMENTAL
SCIENCE CORP.

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Darwin Thomas
Integrity Brokers
16869 SW 65th Avenue #344
Lake Oswego, OR 97035

October 20, 2006

Date Received : October 13, 2006
Description : Ashgrove Cement
Sample ID : MW-3
Collected By :
Collection Date : 10/11/06 12:40

ESC Sample # : L265136-03

Site ID :

Project # : 18484.000

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
p-Terphenyl-d14	45.2		% Rec.	8270C	10/19/06	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 10/20/06 11:33 Printed: 10/20/06 15:19

Page 4 of 6

Attachment A
List of Analytes with QC Qualifiers

Sample #	Analyte	Qualifier
L265136-03	p-Terphenyl-d14	J2

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable unless qualified as 'R' (Rejected).

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

		Control Limits		(AQ)		(SS)
2-Fluorophenol	31-119	Nitrobenzene-d5	43-118	Dibromfluoromethane	68-128	64-125
Phenol-d5	12-134	2-Fluorobiphenyl	45-128	Toluene-d8	76-115	69-118
2,4,6-Tribromophenol	51-141	Terphenyl-d14	43-137	4-Bromofluorobenzene	79-127	61-134

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
10/20/06 at 15:19:28

TSR Signing Reports: 134
RX - Priority Rush

Sample: L265136-01 Account: INTBROLOR Received: 10/13/06 09:00 Due Date: 10/23/06 00:00 RPT Date: 10/20/06 11:33
Deleted NWTPHDX, NWTPHGX, and SV8270PAH. Added HCID per MB. AV 10/16
Sample: L265136-02 Account: INTBROLOR Received: 10/13/06 09:00 Due Date: 10/23/06 00:00 RPT Date: 10/20/06 11:33
Deleted NWTPHDX, NWTPHGX, and SV8270PAH. Added HCID per MB. AV 10/16
Sample: L265136-03 Account: INTBROLOR Received: 10/13/06 09:00 Due Date: 10/23/06 00:00 RPT Date: 10/20/06 11:33
Deleted NWTPHDX, NWTPHGX, and SV8270PAH. Added HCID per MB. AV 10/16

CHAIN OF CUSTODY

16043 SW Kimball Avenue, Lake Oswego, OR 97035 Phone (503) 636-8700 Fax (503) 697-4499 Mobile (503) 970-5500 Courier (503) 784-7477

Appendix66-000094